The Goulstonian Lectures

ON

THE PHYSICS OF THE CIRCULATION.

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BY PAUL M. CHAPMAN, M.D., F.R.C.P. LOND.,
PHYSICIAN TO THE HEREFORD GENERAL INFIRMARY.

LECTURE I.

MR. PRESIDENT AND FELLOWS,—It has been my object, ever since my observation was first directed by Dr. Burdon Sanderson to the consideration of the graphic representation of the heart's action, to endeavour to obtain a more accurate clinical knowledge of the state of the whole circulation than is obtained by the ordinary methods of the physician. For this purpose I have studied the literature of the subject and the results published by physiological laboratories in England and on the Continent, at the same time endeavouring to carry on clinical observations of my own by methods which I shall describe in the course of these lectures. It would be impossible to treat the whole subject of the "Physics of the Circulation" in three short lectures, and some explanation is due from me as to the selection of my title, for which I must ask your indulgence. The aim of these lectures is to commend as strongly as possible a more close and accurate observation of the state of the circulation in the sick than is now employed in clinical medicine. The cardiograph has practically never been used by physicians, while the sphygmograph has fallen into disuse. The indistinct and largely imaginative use of the senses of hearing and touch has led to the disuse, and in England to the distrust, of accurate instrumental measurement in medicine in favour of the employment of what we like to call our "own unaided observation." I believe that partly reluctance to take trouble and partly the sense that our own individuality, rather than great accuracy in diagnosis, is the main factor in creating what is known as a successful practice, have more to do with this feeling than we are ever likely to acknowledge to ourselves. Be this as it may, it is the conviction of others besides myself that the employment of the cardiograph alone may give us definite proof of conditions otherwise not recognisable—still more, that the combined use of the cardiograph with the sphygmograph may be the only means in certain cases of arriving at a definite diagnosis. It is especially for the latter method of observation that these lectures are intended to be some preparation, and this can only be done by entering somewhat largely into the subject of the "physics of the circulation," which will be dealt with in a kind of summary of our present knowledge. The graphic representation of the arterial pulse and its relation to the cardiographic tracing can then, and then only, be properly discussed. It will be found, in the course of these lectures, more convenient to consider the cardiographic tracing first by itself separately in connexion with the intra-cardial variations of pressure, and again secondarily in connexion with the pulse tracing. In discussing the mechanism of the circulation it is of the first importance to accustom the mind to regard all changes in blood flow through any particular bloodvessel or cavity as conditioned by variations of pressure. To say that during ventricular contraction the atrio-ventricular valves are closed, and that consequently the blood is forced out of the heart into the arterial system, may be correct in fact, but it is a mode of expression not so helpful to the understanding as to say that, owing to certain detailed circumstances, the intra-ventricular pressure is raised so far as to preponderate over the pressure in the aorta. I shall therefore, whenever possible, speak of blood flow in any individual as being immediately conditioned by variations of blood pressure, though, in comparing different individuals, it must never be forgotten that a stream meeting with little obstruction may, with less driving power behind it, attain the same velocity as a stream driven with much greater power if the obstruction is correspondingly great.

Before proceeding to the consideration of clinically observable conditions it will be necessary to review shortly the state of our physiological knowledge at the present date—(1) as to the state of the heart and its contents during a revolution, and the mode of production of the heart sounds, (2) the effect on the circulation of contributory influences such as respiration, at which part of these lectures some words on the venous and capillary circulation will be convenient, and lastly (3) as regards the sequence of events within the arteries, the sphygmographic tracing, simultaneous tracings, and the use of the combined method. A full historical account of our gradual advance in knowledge would not here be possible. It will not even always be possible to pause in order to give my acknowledgments to those who have furnished me with facts. I can, however, at the outset refer to Marey's initiative work in France; to the works in German of v. Frey and Krehl, and of Hoorweg of Utrecht, and especially to the valuable articles of Hürthle of Breslau[1] and to the exhaustive summary by Tigerstedt;[2] and in England to the physiological work of Burdon Sanderson, Waller, Roy and Adami, and others, and to the suggestive clinical observations of Broadbent, Ewart, and Douglas Powell. The latest contribution to the study of the mode of production of the first heart sound is furnished by Kasem-Bek[3] by experimental inquiry conducted in the laboratory of Joh. Dogiel of Kasan, who had in 1863, in conjunction with C. Ludwig, made experiments of the following nature. They took a dog, opened its chest, and one after the other tied the upper and lower venæ cavæ, the pulmonary veins, and lastly the aorta. The heart was then excised and immersed in a retort filled with defibrinated blood, and the narrowed end of the retort was closed with an elastic membrane and connected with the elastic tube of a König's stethoscope; under such circumstances the heart, when contracting normally, gave rise to a sound. Dogiel and Ludwig therefore argued that the noise made by the contracting muscle plays the most essential part in the production of the first heart sound, the system of many branched bundles of muscle superposed in layers giving a tone or noise by their sudden contraction. In 1869 Guttmann and Rosenthal, repeating these experiments, considered the sound obtained to be hollow and toneless in comparison with the normal sound, and thought that for its production the contraction of the papillary muscles would be sufficient, by whose means the valves were put into vibration but not closed. Guttmann concluded that the first sound was a mixed one and was chiefly caused by the tension on the valves, but secondarily through muscle contraction. Von Bayer, in 1870, by connecting a glass tube with the ventricle through the aortic opening and suddenly letting a column of water into the heart, obtained a sound shorter, duller, and higher-pitched than the first heart sound. Since this sound strikingly differed from the normal, he concluded that the first heart sound was a muscle sound. Ostroumoff, in 1873, criticised Dogiel and Ludwig's experiments, saying that in them the heart was not wholly emptied of blood. When this was done he obtained no sound at all which could be heard through the chest wall. In a further series of experiments he excited the heart by electricity and could not thus satisfy himself of any dependence of the heart sounds on muscular contraction. The opponents of the muscle theory make chiefly two objections to the supporters of it—first, that the heart has never been so completely emptied of blood as to avoid the possibility of sudden valvular tension; and secondly, that the muscular bundles of the ventricle are not in a condition to produce a tone, since the heart contraction is not tetanic, while Helmholtz has proved that only tetanic muscular contraction produces a tone. With regard to the last objection, the bundles of muscular substance in the ventricle cross and recross each other, and are so overlaid one upon another that by a sudden contraction it is quite possible that they could give rise to a sound and not merely to a rustle. Kasem-Bek's experiments seem to be fairly conclusive with regard to the first objection. They were of two kinds. First, a dog's heart was rapidly removed and, with the apex uppermost, was slightly compressed in the hand. It was then put into the retort apparatus described by Dogiel and Ludwig. Since, according to Guttmann, the valves might be made tense even in a heart emptied of blood, Kasem-Bek excised a portion of the auricular wall and thrust short gutta-percha tubes shaped like ear specula into the auriculo-ventricular openings, with the funnel-shaped expansion above and the narrow ends within the ventricles;

[1] Pflüger's Archiv für Physiologie.
[2] Physiologie des Kreislaufes.
[3] Pflüger's Archiv, Band xlvii., 1890.

these were either fixed in position by pins or by closing the auricles over their expanded ends. After every experiment he ascertained that no blood was in the ventricle. When the heart was now auscultated he heard, with strong and regular contractions, a loud and well-continued tone, which differed little from that heard over the apex before the experiment, except that the sound was louder in the excised heart. In his second series of experiments, with the heart *in situ*, he opened the pericardium and passed one index-finger round the aorta and pulmonary arteries, the thumb being in front at the auriculo-ventricular limit. When the thumb and finger were compressed so as to prevent blood entering the heart there were heard on auscultation through the uninjured chest wall on the left side a first and second sound once; then the second sound disappeared, while the first sound persisted, though less loud than before. Krehl[4] comes to the same conclusion as Kasem-Bek. The consideration of the first sound as a muscle sound persisting in a measure throughout the systole originated with Turner in 1829, and the same view was held by C. J. B. Williams and the committee of the British Association in 1836. It is, I think, after the experiments I have related, as far as possible proved that the first sound is a muscle tone, to which, indeed, other sounds are superadded, especially those arising from the vibrations of the mitral and tricuspid valves, also from the vibrations of the semilunar valves, and from the vibrations of the blood column immediately above them. With regard to the second sound, it will suffice to say that it disappears when the valves are destroyed, and that it consists of two sounds united, due respectively to the closure of the semilunar valves and to the vibrations of the blood column above them. We have, of course, two first and two second heart sounds, for sounds are conveyed by both sides of the heart. These, under normal circumstances, are always heard synchronously. A reduplication of sounds, when heard, is most frequently in connexion with the second sound at the base of the heart; and it is to be remembered, as has been shown by Roy and others, that the distensibility of the pulmonary arteries is greater than that of the aorta, and that the blood pressure therein is both lower and subjected to more frequent variations owing to the disturbances due to respiration. The first sound being a complicated sound chiefly due to contraction of muscles, the fibres of which are common to both ventricles, a true reduplication of it is never heard. An interesting case of apparent reduplication of both sounds will be discussed when the graphic representation of the heart's movements is under consideration. The first sound of the right heart is best heard near the right edge of the sternum, in a limit between the fourth intercostal space and the fifth rib, and the first sound of the left heart in the fifth left interspace or in the fourth intercostal space directly above. The second sound of the right heart is best heard near the edge of the sternum, in the second left intercostal space, and the second sound of the left heart at the right edge of the sternum, at the limit of the first rib and second intercostal space. Vierordt,[5] by placing between the ear and the chest wall a column of thin indiarubber discs and estimating how many of these discs would have to be interposed before the sound vanishes, has judged the relative intensity of the heart sounds. It appears that the first sound is relatively louder on the left side, especially in childhood, and that the second sound, on the contrary, is considerably louder over the pulmonary artery, diminishing up to the age of forty. After that age the aortic second sound becomes slightly louder than the pulmonary second sound. We must assent, I think, to the summing up of Tigerstedt: "So much is certain, that our theory of the normal heart sounds, and, in dependence therewith, our explanation of heart murmurs, is still in many essential points confused, and not to be depended on for the more delicate diagnosis of organic heart lesions."

As to the production of the apex beat we have to consider the changes of position and of form of the heart during systole. An interesting experiment was performed by Berry Haycraft,[6] who noticed that if a needle is inserted through the chest wall into the base of the heart the end projecting from the thorax moves upwards at each systole; if the needle is passed through the thorax nearer to the apex the excursion of the needle is less. If it is inserted into the apex, very little movement is communicated to the needle. As may be seen by direct inspection of the exposed heart during systole, the base approaches the apex, and the latter is the least movable point of the heart. According to Tigerstedt the approximation of the base to the apex can, at least in part, be attributed to the recoil set up as the blood streams through the arterial orifice. However, it appears that in the bloodless frog's heart beating *in situ* the base approaches the apex, although not so markedly as when occupied in driving out blood; it, therefore, to some extent probably depends on the peculiar arrangement of the muscular fibres of the heart. But for mammals Guttmann,[7] Jahn,[8] and others say that when the veins are ligatured the base does not approach the apex. Further, it is possible that the extensibility of the large arteries can, by an increase in length when the blood is driven into them, act in favour of an approximation of the base to the apex;[9] whether distension of the aorta, or recoil from the rush of blood, can play any part in the production of the apex-beat is, however, to me doubtful. As will be shown later, no blood can pass into the aorta until the intra-ventricular pressure is raised sufficiently to overcome the pressure in the aorta; for this a certain time is necessary. The apex-beat appears to be caused by the peculiar spiral arrangement of the muscular fibres whereby the point of the heart rotates during systole from left to right and is tilted up. That the contraction itself is very sudden will appear from the fact that the rapidity of propagation of the wave of contraction throughout the heart has been estimated by Waller to be at about five metres per second; we may therefore assume that the apex-beat occurs at the commencement of systole, or at least at such a time as to exclude the supposition that it is caused by elongation of the aorta owing to its reception of the contents of the heart. In this connexion it may be convenient to mention that according to Roy and Adami[10] the papillary muscles contract later and cease to contract earlier than the ventricular wall in a ratio of 5 to 8. Fenwick and Overend[11] find that the papillary muscles contract one-twentieth of a second later than the heart's apex. The idea is commonly held that the pulmonary and aortic valves are closed by the regurgitation of blood against them owing to the relaxation of the ventricles and the consequent alteration in pressure on the two sides of the valves. This is not exactly the case. During systole the blood is forced through the orifices, which at that time are mere chinks owing to the pads of muscle which take their origin from all sides of the ostium. Vortices are thus created in the space between the arterial root and the edges of the valves. These vortices tend to press the edges of the valves together, and the valves consequently close at the moment that the blood actually ceases to stream through the narrow crevice. By this means all regurgitation is avoided, the valves being already closed before the recoil of the blood column against them. Were it not for this, some little regurgitation would be constantly occurring, and, indeed, if the necessary muscle pads which support the semilunar valves are insufficiently developed, an aortic insufficiency may appear in spite of perfectly normal valves.[12] The muscular arrangement at the venous orifices has also its uses in favouring blood flow. When fluid flows out of an opening in the bottom of a vessel the lateral pressure forces the fluid through the opening in a funnel shaped stream, so that the mean section of the stream is smaller than that of the opening. During relaxation of the auricles the venous orifices are slightly enlarged, so that the largest possible amount of blood may flow through the orifices in a given time. In discussing the graphic records of the variations of pressure within the heart and bloodvessels reference has particularly to be made to the recent work of Hürthle and v. Frey, and to that of Roy and Adami in England. Simultaneous measurements of the amount of the variations in pressure can only be done in the physiological laboratory; I shall, therefore, merely give their results where useful for the purpose of a better understanding of the cardiographic and sphygmographic tracing, and I will not attempt to describe the different forms of manometers employed, though, according to the various kinds of instruments used, rather different tracings are obtained of the intra-ventricular pressure. V. Frey and Krehl say that the tracings obtained by other instruments than their own are owing to the use of an open sound, which, being inserted too far into the ventricle, is liable to be blocked by the contraction of the papillary muscles. With

[4] Ueber den Herzmuskelton, 1889.
[5] Die Messung der Intensität der Herztöne. Tübingen, 1885.
[6] Journal of Physiology, 1891.
[7] Archiv für Pathologische Anatomie, 1871, p. 540.
[8] Deutsches Archiv für Klinische Medicin, 1875.
[9] Giraud Teulon, Gazette Médicale de Paris, 1856.
[10] The Practitioner, 1890.
[11] Brit. Med. Jour., 1891, p. 1117.
[12] Hesse, Archiv für Anatomie und Physiologie, 1880, p. 338; and Krehl, Abhandlungen der Sächsischen Gesellschaft der Wissenschaften, 1891, p. 348.

regard to this criticism it is remarked by Tigerstedt that it does not apply to the results of Chauveau and Marey, since those investigators used a closed bulb filled with air, which was not entirely driven out when the bulb lay in the ventricle during systole. Owing to the disturbance produced in the heart by the insertion into it of sounds through the jugular vein or carotid artery, it is difficult to estimate by this means the maximum pressure within the cavities. In the right auricle of the dog this is estimated at about 20 mm. of mercury.[13] Jager's estimate from three experiments is as follows:

	I.	II.	III.	
Left ventricle ...	234	174	176	mm. of mercury.
Aorta	212	162	158	
Right ventricle...	28	44	72	

The pressure in the right ventricle as compared with that in the left, according to different writers, is as 1 to 3, 1 to 4, or 1 to 5. The intra-ventricular pressure curves of Chauveau and Marey, and also those of Fredericq and Hürthle, show a slight upheaval just before the main rise of pressure, attributable to the alteration in the ventricular pressure due to the contraction of the auricle. The degree of its separation from the main rise is dependent on the rapidity with which that rise ensues, and it may thus be merged in the upstroke or altogether lost. The same slight upheaval may be noticed in some tracings of the pressure within the aorta and carotids. Hürthle has obtained it in dogs with very low aortic pressure, showing that the influence of a sudden rise of pressure within the ventricle caused by the auricular contraction may be felt within the aorta. It is known that the auriculo-ventricular valves close at the commencement of ventricular systole; the time of their opening is inferentially assumed to occur at the commencement of diastole. In considering the arterial pulse wave it is important to know at what point of the heart tracing the semilunar valves open and blood enters the aorta, and also at what point the valves close. The arterial pulse can, if this be known, be divided into a systolic and a diastolic portion.

With regard to the opening of the semilunar valves after ventricular contraction commences, a certain time must elapse before the pressure within the ventricle rises to such a point as to overcome the pressure within the aorta. Until this point is reached the semilunar valves must necessarily be assumed to be closed. According to Chauveau and Marey, in the horse the rise of pressure in the aorta begins about 0·1″ after the commencement of ventricular contraction,[14] and the pressure curve of the ventricle does not show a disturbance at this juncture. The time difference between the commencement of rise of pressure in the ventricle and the expansion of the aorta, according to Hürthle,[15] is in the dog only from 0·02″ to 0·04″, the interval being less the lower the blood pressure in the aorta. We must take into consideration that the pressure remaining within the ventricle at the end of diastole may influence the length of time which elapses between the commencement of contraction in the ventricle and the rise of pressure in the aorta; the state of the auriculo-ventricular valves, therefore, and the blood pressure within the auricle and pulmonary veins may also affect the time of delay before the aortic rise. The time of delay is, however, little noticeable in comparison with large variations in pressure. By comparative simultaneous tracings of the heart's apex and the carotid pulse in man, and allowing for the delay in transmission along the artery from the semilunar valves to the point of the carotid artery whence the tracing is taken, we find that the semilunar valves open at about the summit of the first rise in the cardiac tracing, and that while the blood is entering the aorta the direction of the tracing is changed, continuing more or less parallel with the base line—i.e., the horizontal. The delay in transmission from the semilunar valves to the carotid is thus accounted for inferentially. At every beat of the heart blood enters the aorta, and a wave is set up in the arteries, this being of course felt earlier in the carotids than in the radial artery, the time difference between these two points being about 0·0786″. The length between the two points is about 60 cm. The length of vessel from the semilunar valves to the carotid is about one-third that from the carotid to the radial—i.e., about 20 cm.—and the time occupied in traversing it is inferentially one-third of 0·0786″, or 0·0262″, and from the semilunar valves to the radial 0·0786″ + 0·0262″ = 0·1048″.

If one takes a synchronous tracing of the apex-beat and carotid pulse it is found that the apex curve begins to rise considerably earlier than the carotid pulse—i.e., much earlier than 0·0262″, and more like 0·1182″. Subtracting 0·0262″ for the time of transmission between the semilunar valves and carotid, a time of 0·092″ remains, which must be purely cardiac. This is the time during which the intra-ventricular pressure is rising to overcome the aortic pressure; in other words, it is the time from the commencement of ventricular contraction to the opening of the semilunar valves. This time is called by German writers the *Anspannungszeit*, or time of extension or stretching, or *Verschlusszeit* or time of confinement, and by Keyt it is termed more conveniently and clearly the "præsphygmic" interval, since in observations on the heart and pulse it is frequently necessary to consider or to eliminate the præsphygmic interval. Tigerstedt gives the estimations for the interval of various authorities:—

Præsphygmic interval in seconds.	Authorities.
0·8	Marey.
0·073	Rive.
0·096–0·087	Edgren.
0·07	Grunmach.
0·054	Keyt.

The interval varies inversely as the pulse frequency, being according to Keyt about one-tenth of the systolic period. The semilunar valves must close when the aortic pressure exceeds that in the left ventricle. Whether the second sound is coincident with their closure is not made out; it may occur just subsequently to their closure by the vortices set up behind the valves, the second sound being coincident with their tension, though not with their closure. The time of closure is to be found by comparative estimation of the pressures in the ventricle and aorta. By this means v. Frey has estimated the closure to take place in the upper half of the drop in the apex tracing. Hürthle[16] places it shortly after the commencement of relaxation of the ventricle. These estimations are probably correct, though Chauveau and Marey place it much lower down the limb. The outflow of blood from the ventricle lasts, then, from the opening of the semilunar valves to this point. This period is termed by German writers the *Austreibungszeit*, or time of expulsion. Hürthle remarks that the duration of this period only varies very slightly if the pressure within the aorta is increased (0·178″ to 0·195″, dog). According to Roy[17] the fibres of the heart wall shorten less during contraction when the arterial blood pressure is high. This is not to say that their persistence in contraction or, in other words, the duration of systole is shortened. The effect, however, of the diminished shortening of the muscular fibres of which Roy speaks is to increase the quantity of residual blood which is left in the ventricle at the end of each systole. Ordinarily during systole "the lower part of the ventricular cavity closes completely, the musculi papillares coming into contact with one another; the upper part of the cavity, however, lying between the valves and the papillary muscles, does not become emptied."[18] This residual blood being increased in quantity, compensation has to occur by increased dilatation. Up to an undefined point this dilatation may be physiological, but it is easy to see that it may become pathological. It may indeed in excess lead to deficient closure of the auriculo-ventricular valves, so that we can in this manner obtain a mitral incompetency from simple increase in the aortic blood pressure. Since cardiographic tracings are readily obtainable it is important to consider the apex-beat somewhat closely and to see how far the curve represents a curve of intra-ventricular pressure and in what way it varies with an increase of frequency.

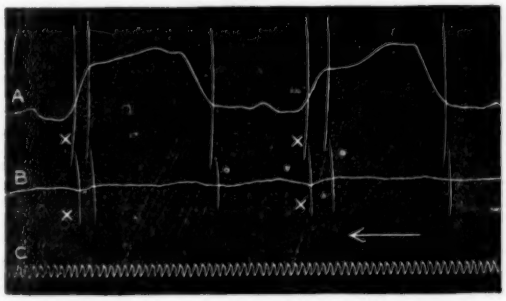
Contrary to the generally accepted view the apex-beat is stated by Mariannini and Namias[19] in 86 per cent. of women and in 62 per cent. of men to be situated in the fourth intercostal space. I think this cannot be so with English people, with whom the apex-beat is certainly more frequently felt in the fifth intercostal space. The apex tends to fall away from the chest wall when the patient is lying flat on his back. When in this position, if he rolls over on to the right side the apex-beat may disappear under the sternum. If he rolls to the left the apex comes most closely into apposition with the chest wall. On this

[13] Goltz and Gaule, Archiv für die Gesammte Physiologie, 1878, p. 166; Mazini, Archivio Italiano de Biologie, 1887, p. 127.
[14] Mémoires de l'Académie de Médecine. 1863, pp. 305–6.
[15] Archiv für die Gesammte Physiologie, No. 49, p. 56 et seq.
[16] Archiv für Physiologie, No. 49, p. 45.
[17] The Practitioner, 1888, p. 347.
[18] Brit. Med. Jour., Dec. 15th, 1888.
[19] Archivio Italiano de Biologie, 1883, p. 143.

account, and because when so lying the respiratory movements of that side of the thorax are limited, the last is the most convenient position for taking cardiographic tracings, the left arm being flexed and the palm of the hand lying under the left cheek. The apex-beat is caused by the sudden hardening of the heart in contraction against its contents, and by the apex being thrown forwards and upwards as the heart rotates on its own axis to the right, while the apex comes into a perpendicular with the basal openings. For the reasons which I have already given we can exclude the participation of extension and recoil of the aorta. The base of the heart may indeed approach the apex in systole, partly owing to these causes, but the apex is not thrust against the parietes of the chest by this means. A distinct apex-beat occurs in an excised heart emptied of blood, though the tracing, it is true, obtained from a bloodless heart is not the same as when blood is circulating through it. The tracing of the apex-beat is, by comparing it with tracings taken from the wall of the exposed heart, shown to be a tracing of ventricular muscular contraction. How far this is modified by the blood pressure within the ventricles becomes a matter of exceeding interest, the question whether the heart tracing is any guide to a knowledge of intra-ventricular states being all-important if it is to assist us in our physical examination of the sick. The general correspondence of synchronously obtained curves of ventricular contraction and of intra-ventricular blood pressure is so close as to be in favour of the view that a ventricular apex curve, or "cardiogram," is indeed, to some extent, a curve of intra-ventricular pressure.

From cardiograms obtained from the wall of the exposed heart Roy and Adami give a scheme of three forms of tracings obtained by exerting different grades of pressure on the ventricle. It will be seen that when there is any approach to a distinct angle of drop consequent on the relaxation of the ventricle the duration of the whole period of contraction is perfectly measurable, the point of rise corresponding in each case. The curve indicated as No. 1 would be discarded as fallacious by any experienced cardiographist. With his cardiograph he would exercise more pressure on the interspace until he obtained a sharper angle of drop, at the least as in II. It is a matter for regret that, because such a tracing as No. 1 can be obtained by using light pressure, Roy and Adami should draw the conclusion that it is difficult, and in most cases impossible, to measure from the cardiogram the different phases of the heart's revolution. Such tracings as that in No. 1 either need not be obtained or may be rejected. Moreover, the assertion that the duration of systole of the ventricle can as a rule be exactly measured is greatly strengthened by numerous and conclusive experiments, which show that in the same individual the duration in time of ventricular contraction for any increase in pulse frequency undergoes a steady and uniform diminution, and that there is no difficulty or source of error in measuring these changes by means of acceptable cardiographic tracings.[20] That the cardiographic tracing varies as it is obtained from different parts of the exposed heart wall (v. Frey and others) need not concern us, as we have to deal with the apex-beat only. Extreme physiological accuracy we cannot hope to attain, but by comparison of contraction curves and of pressure curves it is obvious that we are in possession of means of observation of a most valuable kind. The curve of muscular contraction is modified by the contraction of the muscle on its contents, as is seen by comparison of the full and empty heart during contraction. Hürthle[21] thinks that the duration of the cardiogram sufficiently corresponds to the pressure curve of the heart, while v. Frey also thinks that the cardiogram and contraction curve taken from the exposed heart are of about the same duration, yet he does not think that much information can be obtained from the cardiogram as to the course of pressure in the ventricle.[22] From the cardiogram nothing can be learned as to the time of closure or of opening of the auriculo-ventricular valves. The time of opening or of closing of the semilunar valves has been the subject of continual discussions. According to Edgren and v. Martius, if we take a simultaneous tracing from the heart and carotid and allow 0·0262" for transit of wave from the heart to the point whence the carotid trace is taken, we find that the commencement of the rise of pressure in the aorta corresponds to the top of the first rise in the heart tracing, and that consequently it is at this point that the semilunar valves are opened. Hilger[23] places their opening 0·02" to 0·01" before the point is reached. The moment of closure of the semilunar valves is estimated by a comparison of the pressure curves from the aorta and left ventricle. The point at which the aortic pressure is suddenly in excess is somewhere in the line of drop. By marking off the first and second sounds as they are heard, and continuing to do so rhythmically in order to avoid as far as possible error due to the personal equation of the observer (from 15" to 20"), attempts have been made to obtain the exact point of closure. The method is so full of error that the results are not to be trusted, but the moment of closure may perhaps safely be assumed to be in the line of drop—higher according to Marey, lower according to Edgren. Whether it occurs in the first or second half of the descending line is, according to Tigerstedt, not to be decided owing to errors in the method of marking. I am glad to be able to show a tracing which I have myself obtained from a patient, which is of much interest in this relation. A sharp "knick" was felt by the finger when pressed into the second intercostal space near the sternum, clearly corresponding to the closure of the semilunar (pulmonary) valves. Together with an apex cardiogram a simultaneous tracing was obtained from this point by means of a spring and air transmission. It will be seen that the "knick" in question corresponds in time with the lower part of the descending limb of the cardiogram.

FIG. 1.



A, Cardiogram. B, Second intercostal space. C, Harmonium reed. The arrow indicates the direction in which the tracing has been made.

About halfway down the descending limb of the cardiogram a slight bulge is often found. On Edgren's tracing of a normal curve he gets this lower down the limb, so that it appears almost to be an upheaval at the end of the drop. Neither of these points, however, appears to be synchronous with the closure of the semilunar valves, and the appearance is probably caused by the rush of blood from the auricle into the ventricle, due to the relative change of pressure between the two cavities owing to ventricular relaxation.[24] Previous to the great main rise in the cardiogram there is an upheaval corresponding to the contraction of the auricle, which immediately precedes, and is even in continuity with, ventricular systole. In my experience this may lead to error in measurement of the duration of ventricular systole. With light pressure of the cardiograph it may often merge into the ascending limb, and being measured as systolic an excessive length of ventricular systole may be simulated. For all purposes of measurement it is important that the cardiogram should be very sharp and clear, and the main systolic rise should take place from a distinct angle, showing that it is due to a marked and sudden change. The upheaval due to auricular contraction is by no means always to be obtained. It is necessary to have a favourable case, a sensitive instrument, and the luck which is born of experience.

In the cardiographic tracing on the next page we have, therefore, the following points to consider:—

As to measurement of the duration of ventricular systole, if we assume the valves to close somewhere in the line of the descending limb it should, to be exact, be measured from B to this point. Since this point is not visible on the tracing, and since we know that the angle (at D) where the sudden drop begins certainly corresponds to the cessation of active contraction of the ventricle, it seems to be more prudent to

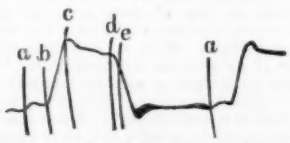
[20] See table of duration of systole for different pulse frequencies.
[21] Loc. cit., No. 49, p. 93.
[22] Ibid., p. 118.
[23] Zeitschrift für Klinische Medicin, 1891, p. 163.
[24] Fredericq, Centralblatt für Physiologie, 1892, p. 257.

measure to the angle of the drop when comparing relative "durations of systole" one with another. Baxt and v. Frey measure to the bottom of the drop. Volkmann and Donders in their measurements of systole refer to the interval between the two heart sounds. The measurement from the beginning of the main systolic rise to the angle of the drop has, however, the great authority of Hürthle and of Burdon Sanderson, and whenever speaking of the "duration of systole" I mean, and think that we should for practical purposes be understood to mean, the time measurement between these points.

I have carefully said that the angle of drop corresponds to the cessation of active contraction of the ventricle, as it appears that although the actual expulsion of blood ceases at this point, yet the muscle does not suddenly relax, a certain short time (*Entspannungszeit*) intervening. Any calculations which endeavour to include this period in the systole, or which are made by estimating the time interval between the first and second sounds, will be somewhat in excess of those which I have published in previous papers.

In conclusion (I quote from Tigerstedt) "the apex curve, as was first remarked by Chauveau and Marey, represents a combined pressure and volume curve of the ventricle. It is a pressure curve, for the knob placed against the chest wall exerts a pressure against which the heart by systole performs work. At the same time it is a curve of volume, in so far as it is also influenced by the changes in the volume of the heart. By the filling of the heart during diastole the curve gradually rises from the abscissa; by the sudden emptying of the ventricle when the semilunar valves are opened the pressure of the heart against the chest wall will be somewhat less, and the lever can now no more follow the progressive increase of ventricular pressure, but describes a plateau." Volkmann

FIG. 2.



a, *b*, auricular systole; *b*, *c*, *Verschlusszeit*, or time of confinement; *c*, *d*, *Austreibungszeit*, or period of expulsion; *d*, points of cessation. Here a drop occurs, at the bottom of which is usually a notch due to the moment of inertia of the lever. Between *c*, *a*, a slight rise takes place as the ventricle slowly fills and the blood pressure increases, till at *a* it is again suddenly raised by contraction of the auricle.

for a pulse frequency of 84 gives the interval between the first and second sounds as 0·375″, and the diastole as 0·380″. Donders measures the same interval—from 74 to 96 per minute—as varying from 0·327″ to 0·301″. For a difference of from 63 to 124 per minute in the same case the duration of systole sank from 0·382″ to 0·195″. Landois gives the duration of systole between 53 and 113 from 0·346″ to 0·190″, and Edgren gives the interval between the heart sounds for a pulse-rate of 70 as 0·379″. Thurston for pulse variation from 47 to 128 gives the duration of systole between 0·347″ and 0·256″. Generally speaking, and this is also true of variations arising from artificial stimulation of the inhibitory or of the acceleratory nerves, the difference between a slow and rapid pulse frequency is more at the expense of diastole than of systole. It will be realised that among all these somewhat conflicting statements it is very important to determine some standard of duration of systole for different pulse frequencies. Only by so doing, or by attempting so to do, shall we be able to institute useful comparisons of the cases we meet with. So long ago as 1882, in a report to the Scientific Grants Committee of the British Medical Association (Aug. 19th) I endeavoured to give the average duration of systole for every increase of five beats in pulse frequency per minute from 46 to 130, the measurements being taken from the initial systolic rise to the sharp angle of drop, which, as I have said, is taken by Burdon Sanderson and by Hürthle as the termination of outflow of blood from the ventricle. The range was from 0·36″ to 0·21.″ There is no absolutely fixed rate of diminution. For every five beats the diminution is about 0·0085.″ My table, which has been republished in "Landois and Stirling's Text-book of Human Physiology," p. 97, has, however, been of the greatest use to me for purposes of comparison, and for establishing abnormalities, and its general correctness becomes more evident to me as my experience becomes more extended. I therefore give the table again, together with another table which is artificial and diagrammatic, but which will immensely facilitate the calculations which have to be made in measuring cardiograms and estimating pulse frequency per minute.

Experimental Table

Frequency per minute.		Duration of systole in seconds
130	.....	0·2100 (exertion).
116 to 120	.....	0·2350 (mixed cases).
111 to 115	.....	0·2475 (mixed cases).
106 to 110	.....	0·2675 (exertion).
101 to 105	.....	0·2543 (Turkish bath).
96 to 100	.....	0·2540 (Turkish bath).
96 to 100	.....	0·2730 (normal).
91 to 95	.....	0·2690 (mixed cases).
86 to 90	.....	0·2800 (Turkish bath).
86 to 90	.....	0·3200 (exertion and normal).
81 to 85	.....	0·3030 (Turkish bath).
81 to 85	.....	0·3250 (exertion and normal).
76 to 80	.....	0·3032 (Turkish bath).
76 to 80	.....	0·3300 (exertion and normal).
71 to 75	.....	0·3033 (Turkish bath).
66 to 70	.....	0·3200 (mixed cases).
61 to 65	.....	0·3200 (mixed cases).
56 to 60	.....	0·3460 (normal).
56 to 60	.....	0·3200 (Turkish bath).
51 to 55	.....	0·3425 (normal).
46 to 50	.....	0·3600 (normal).

Diagrammatic Table for facilitating Calculations.

Time of total revolution in seconds.		Time of systole in seconds.		Time of diastole in seconds.		Pulse-rate per minute.
1·333	.....	0 3600	.....	0·9733	.....	45
1·200	.....	0 3515	.....	0·8485	.....	50
1·0909	.....	0 3430	.....	0·7479	.....	55
1·000	.....	0·3345	.....	0·6655	.....	60
0·9230	.....	0·3260	.....	0·5970	.....	65
0·8570	.....	0·3175	.....	0·5395	.....	70
0·8000	.....	0 3090	.....	0·4910	.....	75
0·7500	.....	0·3005	.....	0·4495	.....	80
0 7060	.....	0·2920	.....	0·4140	.....	85
0·666	.....	0·2835	.....	0·3831	.....	90
0·6316	.....	0·2750	.....	0·3566	.....	95
0·6000	.....	0·2665	.....	0·3335	.....	100
0·5701	.....	0 2580	.....	0·3121	.....	105
0 5454	.....	0·2495	.....	0·2959	.....	110
0 5217	.....	0·2410	.....	0·2807	.....	115
0 5000	.....	0 2325	.....	0·2675	.....	120
0·4800	.....	0 2240	.....	0·2560	.....	125
0 4615	.....	0 2155	.....	0·2460	.....	130
0·444	.....	0·2070	.....	0 2374	.....	135
0·4286	.....	0·1985	.....	0 2301	.....	140
0 4138	.....	0·1900	.....	0 2238	.....	145
0 4000	.....	0 1815	.....	0·2185	.....	150
0 3871	.....	0 1730	.....	0 2140	.....	155
0 3750	.....	0 1645	.....	0 2105	.....	160
0 3636	.....	0 1560	.....	0 2076	.....	165
0 3530	.....	0 1475	.....	0 2055	.....	170
0 3428	.....	0 1390	.....	0 2038	.....	175
0 3333	.....	0·1305	.....	0 2028	.....	180
0·3246	.....	0 1220	.....	0 2026	.....	185
0 3158	.....	0 1135	.....	0 2023	.....	190
0 3077	.....	0 1050	.....	0 2027	.....	195
0 3000	.....	0 0965	.....	0 2023	.....	200

The time of rest and of work in the day, and the considerations thereto belonging, and the influence on fatigue of the heart muscle by merely slowing the pulse by means of drugs, or by lengthening the systole or diastole relatively to each other, become extremely interesting from this point of view.

SWANSEA MEDICAL SOCIETY.—The annual dinner of the members of this society was held at the Mackworth Hotel, on the 22nd ult., and passed off with more than wonted *éclat*. A feature which distinguished the gathering was the presence of Dr. John Williams of London. After the usual loyal toasts had been proposed by the President (Dr. Rawlings), Dr. Ebenezer Davies gave what was described as the toast of the evening, "Our Guest," a compliment which Dr. Williams duly acknowledged. The evening passed very agreeably, and the *réunion* was enjoyed by all present.

The Milroy Lectures
ON
DARWINISM AND RACE PROGRESS.

Delivered before the Royal College of Physicians at the Examination Hall, Victoria Embankment, Feb. 22nd, 1894.

BY J. BERRY HAYCRAFT, M.D.EDIN. &c.,
PROFESSOR OF PHYSIOLOGY, UNIVERSITY COLLEGE, CARDIFF.

LECTURE III.

CRIME AND INCAPACITY.

MR. PRESIDENT AND GENTLEMEN,—We have seen in the last lecture that there is every reason to believe that, on account of improved external conditions, and notably the sanitary advances due to the efforts of preventive medicine, the race is deteriorating in general constitutional robustness. Those selective agencies which in more primitive times destroyed the sickly, especially during their early years of life, have in part been removed or modified, with the result that the sickly are preserved and in larger numbers live through and into the childbearing period, raising the mean duration of life, but notably increasing the rate of mortality after middle age. These sickly ones leave children behind, who, of course, transmit their constitution to the race. In our study of disease we included intemperance, for in cases where there is a distinct liability to give way to drunken habits, and apart from those cases where it is merely a habit acquired in bad company, we may look upon it as a symptom of some innate variation from the normal, which it is often the physician's duty to treat like any other constitutional disease. In the same light we are bound to view the cases of many criminals and persons who from some inborn defect are incapable of doing a sufficient share in the work of the community. Many criminals, perhaps the greater number, are the creatures of accident or of vicious training. Theft by a person in necessity need by no means imply so vicious a temperament as that of a man who spends his life in getting the better of his less clever neighbours, and the killing of a man in passion may be done by one who would be incapable of settling an old grudge by taking a mean advantage of an enemy. Many criminals are incapables driven to crime through their incapacity, and with the incapables we shall study them. Over and above those we have just mentioned, however, are a band of innate criminals whose feet take by nature the crooked rather than the straight path, whose lives alternate between abuse of public law and the sufferance due to its penalty. These beget children and the suffering they inflict and have to endure is continued from parent to offspring. The pedigrees of many of these celebrated criminal families have been written, but perhaps the best known is that of the Jukes (written by R. L. Dugdale), who for seven generations contributed to the community as their share of effort an unparalleled history of pauperism and crime. In this as in other cases we have to eliminate the factor of personally acquired influence of parent upon child, of one companion upon another, and it is impossible to say how much of the residue is due to inheritance. We are bound, however, to assume the existence of this inherited tendency, for people of normal individuality tend by wider influences to adopt the average vices and virtues of the community in which they live. One's personal experience of life shows that crime persisted in is a strong index of innate propensity, and we know that such innate propensity exists, for striking variations are to be observed even amongst those born of the same parents and under the same conditions of education and personal influence. One child may give infinitely greater trouble to rear than all the other members of a family; he may evince evil propensities which are hard or impossible to correct, and he may be seemingly deficient in those qualities which are necessary to useful citizenship. It is seldom that the history of crime can be traced—as in the Jukes family—for seven generations; in most cases the members disperse and intermarry out of their own set, and the record of crime is rapidly lost. It might be assumed that this, indeed, is the most ready way of getting rid of criminal taints; but is it likely that, although lost to discernment, the taint has disappeared? We may dilute ink with so much water that we cannot see its blackness, but dare we assume that the ink has gone? Our inference is rather that by intermarriage the tendency has become in each case less, but that the cases are by so much the more multiplied, and we have every reason to believe that cases such as that of the unmanageable child in a family that I have referred to are instances of a sudden prominence given to evil strains present to one or both of the parental ancestry. While this view of crime forbids us from having any feeling but that of pity for the inveterate criminal, while we cannot cease to view him as one organically diseased, we are also bound to provide that his strain shall stop with him, and not perpetuate itself. As Pike remarks,[1] "Perpetual imprisonment of the irreclaimable—imprisonment not only nominally, but really for life—would be among many causes of that change in the general tone of society which is shown by history to be the greatest preventive of crime as now understood. Like persons affected with scarlet fever or other infectious malady, the propagandist criminal should be confined in his proper hospital—a prison—and if incurable should be detained until his death. Like phthisis or other hereditary disease, the criminal disposition would in the end cease to be inherited, if all who were tainted with it were compelled to live and die childless. The remedy may be painful, and even cruel, but perhaps greater cruelty and greater pain may be inflicted by the neglect which leaves physical and social ills to spread themselves unchecked." In speaking of incapables (including many vagrants) we must draw a strong line of demarcation between those, on the one hand, who are in want through acquired habits of idleness, and those on the other hand who are afflicted during their lifetime by sickness or other adversity. We habitually speak of these classes as "the poor," and the unfortunate use of this term as a common description of totally distinct conditions has led to most undesirable consequences. With us everyone who has not sufficient means of subsistence we term "poor," we assist them out of the public purse, and we consider that in so doing we obey Christian teaching. This theory and its practice are due solely to a slovenly habit of mind, and perhaps to an incomplete acquaintance with scriptural teaching. The "poor" of Bible language means obviously the deserving and unfortunate, probably the incapable, but certainly not the habitually idle and vicious. We are not led simply to infer this, for there are positive statements to this effect. St. Paul said: "If any man will not work, neither shall he eat,"[2] and again: "He that doth not provide for his own house is worse than an infidel."[3] Our forefathers were more discriminating in this respect than we are, and even in the reign of Henry VIII. the line was drawn between "poor, impotent, sick, and diseased folk, the sick in very deed and not able to work, who may be provided for, holpen and relieved, and such as be strong and lusty, who, having their limbs strong enough to labour, may be daily kept in continual labour whereby every-one of them may get their living with their own hands." As physicians, accustomed to look into life's problems more deeply perhaps than do the framers of laws, we are compelled to draw still finer lines of distinction and to separate the poor into the three classes I will now indicate.

There are, then, three quite distinct classes, each with its suitable remedy, and I believe that it is our duty as a profession to instruct the public and the law-framers, who insist upon treating all three classes in exactly the same way. Within the same rooms and wards of the poor-house, or receiving assistance under the same system of out-door relief, we find worthy and respectable men and women and their children whose only fault was perhaps that their small savings over and above the necessities of their life had been spent too carelessly, or even had perhaps been invested in a society served by dishonest men. We find widows and orphans of men who have died from accident or disease in the course of regular and honourable employment. With these will be mixed the class we have especially to study—the incapables; these are poor types, with physical and mental defects, insanity, epilepsy, idiocy, and with these habitual drunkards, criminals, and many vagrants must be included. Lastly, we have those who are capable of earning a livelihood, but who through vice or laziness are brought more or less permanently upon the parish. Before 1834 the Poor-law in country districts habitually made up the wage of the labourer to what was

[1] A History of Crime in England, vol. ii., pp. 579 and 589.
[2] Thessalonians ii., chap. 3, v. 10.
[3] Epistle to Timothy, chap. 5, v. 8.

considered a sufficiency, and those who did better for themselves by independent industry and capacity fared worse from the want of help that the others received. "Poor is the diet of the pauper, poorer is the diet of the small ratepayer, and poorest is the diet of the independent labourer," remarked a witness in the Poor-law Commissioners' Report of 1834. It cannot be denied, therefore, that there is a certain want of independence (especially perhaps in rural districts) engendered by methods of relief administered in past times. As a result of this, those without physical and mental disqualification for work fall back on the Poor-law for relief in time of distress, and, counting on the certainty of this relief, are less strenuous in their efforts to provide against the evil hour. Vice, too, is increased in those who know that during the incapacity which may follow its exercise the workhouse door is open to receive them. We have, therefore, three distinct classes treated in the same way by the Poor-law: those brought to poverty by stress of circumstances; those who are by nature incapable of work; and those who are too lazy or improvident. Where laws or regulations are framed to deal with these three classes as if they formed one natural class the greatest injustice of necessity follows. The law-makers have to deal with the idle and vicious as well as with the deserving and distressed, and by grouping these classes together and framing regulations to apply to all some are of necessity treated more kindly than they deserve, and others with unmerited brutality. This fact was first brought forcibly home to me by a case in a north country poor-house—a case which quite represents the present disgraceful method of treating those without means of subsistence. A woman, a soldier's widow, whose husband and three sons (all soldiers) had been killed in active service, was left without relatives. She supported herself and lived soberly until old age, when feebleness and commencing gangrene of the foot compelled her to seek the poorhouse, where she died alone and unvisited by any friend. I saw her in the next bed to a drunken prostitute. The one woman had given of her body to the country's defence, the other had given of her body to its ruin, and yet the country treated them both alike because they were alike in want of bread. Lawyers and law-makers have tried, with limited success, to cope with these questions ever since the first Poor-law in 1601; they have failed perhaps from their point of view and of approach. Our point of view will be a different one from theirs; it will be the one adopted by those whose work in life is to aid the suffering and diseased, who have learned in so doing somewhat of the length we can go and the means whereby we can get at them; and this problem of the destitute is one of allied nature to those with which we are daily brought in contact. We must insist that those who are able-bodied, but idle and vicious, shall be placed apart and treated under separate regulations. They are subjects for the police and for the criminal law; they are outcasts from humanity, and may have the hardest bed and the coarsest fare. We may endeavour to reclaim them, but whilst unreclaimed let them feel the full effects of their misconduct. The prison cell is warmer than the rock, cranny, or pit in which the primitive Briton sheltered himself, and the prison fare is better than was his food. Why, then, should the idle and reprobate vagabond receive the advantages of a civilisation built up by the busy toil of centuries, and in which he will take no part? If we divide in this way what are really the criminal class of destitutes we can deal fairly and reasonably with the remainder. Under the varying conditions of life some people are hardly pressed upon, and the burden is light upon other persons' shoulders. Our conditions of life, although perhaps selective in the main, are by no means uniformly so. Thus it happens that the amount of money in a man's pocket is no certain criterion of even his capacity to make it, let alone as to his possessing other qualities which may be even more estimable. Especially in a community such as ours—where men pass in a lifetime from poverty to riches or the reverse, and often as a result of surrounding conditions which control their actions—we may have stupidity and vice seated on inlaid Florentine, and intelligence and virtue on rush-bottom. As I hope to bring out shortly there is too little selective influence in a civilised state. Some of our old aristocratic families were headed no doubt by men of great capacity at their commencement, but it was the organisation of Romish civilisation that gave them the conquest over their worse organised fellow kinsmen settled in England. Blood for blood, innate quality for innate quality, there was little to choose between them, yet circumstances made one the villein, and the other the lord. Selective influences operating in a savage community have been kept in abeyance to a great measure by inherited property and class distinction; and though, fortunately, good men are continually rising, and vicious, idle men are falling, yet this is to a great extent kept in check. Thus we find in the lower class many men and women of excellent physique and mental capacity doing in their lives as much as can be expected from anybody. From the biological point of view—that of blood, bone, muscle, and brain, a view which we, as a profession, are bound to take—the lower labouring class is little inferior in quality, whilst they exceed in numbers, the upper and middle classes. From changing conditions of life (not uniform in any class) they especially suffer, for they are nearer the limit which, if passed, means deprivation of that which is necessary. We have, therefore, no right to assume that when we find destitution around us the destitute are of necessity more to blame in their lives than we are in ours. They may have been more hardworking and provident, and yet have fallen victims to want. Any note of condescension in our attitude towards this class is an impertinence of the grossest nature, and it is our duty, if we help at all, to do so as one brother to another, simply and naturally. The recipients of help should be allowed to feel that they are receiving only what they would themselves be prepared to give; that they should receive it, not as a dole to be eaten in bitterness, but as a friend's gift to be enjoyed. The dangers of sapping self-reliance by such relief and of the encouragement of laziness are, as under existing conditions of charity, only met by placing the administration of help in the hands of those who are painstaking and discriminating enough to avoid such obvious dangers.

I have thus touched upon these two classes only to bring out in stronger characters the third. While the first class are destitute as the result of vicious training, and the second from the hardships of their special surroundings, the third class are destitute from innate incapacity. To the habitual drunkards and criminals, to the idiots, insane, epileptics, and others suffering from severe constitutional defects, there must be added the vagrants who will not, and cannot, do regular work. I say "cannot," for I believe the vagrant class forms an interesting and ill-understood body by themselves. They fill our workhouses, to which they crowd in inclement weather, leaving the towns for the country in spring, and returning to them in autumn. They sleep in barns, under ricks or hedges, and live on what they can find or beg or steal. They marry and have children, often a source of profit from the increased charity they bring. Give them a spade to dig, a hammer with which to break stones, or a garden to weed, and they tire of the constantly repeated action, be it ever so simple; complex manipulations, or tasks requiring forethought or attention, are for them quite out of the question. They will keep rooks out of the fields, tramp after bullrushes, or trap a rabbit, but an unexciting occupation with a result not immediately attainable is to them unendurable. We can hardly fail to see in this class, in many cases, the direct descendants of our more savage ancestry. Their forefathers most probably never mingled in the streams of civilisation that have flowed by their side. They have continued to exist by the primitive and precarious means adopted by early men to gain their livelihood. Charity, firstly of the monastery and secondly of the Poor-law, has kept them alive, and we have them by our side to-day. Whatever be their origin there they are, living an existence out of place in our society. Theirs are the hardships and privations of the savage, but from their position in society, of which they form the lowest dregs, they have not his advantages. The neolithic ancestor who lived in the Sussex Downs or Yorkshire Wolds, and shot buzzards with flint-tipped arrows, felt a superiority over all else, and we have every reason to believe he was as proud a man as any one of us. But the poor tramp, an outcast and a dependent, lives a life worse than that of the shepherd-dog in the fields, and perpetuates this misery from century to century. Here, as with the drunkard and others of this class, there is clearly a case for segregation. All are obviously unfit to perpetuate themselves, and in the interest of human kindness they should be prevented from so doing.

The criminal and incapable classes, however, form only a small section of the community, and we have now to look around us and to observe what is going on amongst those who are engaged in the active everyday life of the artisan, business, or professional man. We have seen that in all classes, owing to the removal of selective agencies, physical

deterioration is in progress; we have now to see how innate mental capacity and good conduct are being affected. As regards good conduct it is difficult to come to any conclusion, for there are so few facts on which to form a judgment. One can hardly doubt that the external habits of the community are yearly progressing, and that we have acquired a keener public conscience than existed years ago. It is true that trade morality is not as it should be, and we still do not do to our neighbours as we would be done by; the chances are still for the sharp and unscrupulous, ever alive to their own personal advancement. Still there is, I think, some evidence that we are better than we were. Novels like "Tom Jones," or Balzac's "César Birotteau," and "Le Père Goriot" indicate that the sins of our times, which hide their heads and are ashamed, once went through the streets in broad daylight; and works like "Unto this Last" indicate the existence of a keen and growing sense of right and wrong. It is probable, therefore, that already we are beginning to give an increasing premium to goodness of disposition, to look upon selfishness as that which in extreme cases leads even to crime, and to combine against the selfish man. If this is the case we are aiding the development of the race in the best way, we are giving an advantage to the best amongst us, and the result will be their increasing preponderance. We must distinguish here between innate personal goodness of disposition and habits of good conduct imprinted upon the personality by education. The improvement in general morality may be a matter greatly of education, but this will react upon the race by the premium for goodness which this establishes, and by the fact that the man of personal goodness will always obtain this premium, while the man of selfish disposition will rarely be able to disguise his inherent trait. When we turn to a study of those conditions which are modifying the general intellectual capacity of the race we are again confronted by a paucity of definite factors to which we can assign a value; some points, however, come out pretty clearly. We are certainly giving an extended advantage to those who are intellectually capable and withdrawing artificial props to the incapable. Family ties and the transmission of property (a truly Lamarckian transmission of that which is acquired) have had much to do with the prevention of those selective influences which operate with great power in semi-barbaric times.[4] We are here dealing with feelings which are the highest and strongest humanity possesses, the love of a parent for a child. This love may, however, be misplaced and ill-judged, and it is with this misplacement and misjudgment that we are dealing. Until recent times a gentleman might send his son into the army, navy, or church; a point might be stretched for law or medicine, a bank was hardly admitted, and a brewery was unheard of; but every year the number of pursuits that a gentleman's son may follow without breaking family ties is increasing. We have already lady dressmakers; perhaps we shall come to gentleman shoemakers and tailors. With this greater field of work it becomes more possible to put a round man into a round hole, and a stupid boy will not be kept by force of money and family interest in a position for which he is unfitted. We should never wish to see a parent refuse to give every help to a child to aid him on in his struggle for success in life's battle; but already wise parents are beginning to see that in their children's interests it is better for them to be engaged in those occupations for which they are most fitted. Thus it happens that we find men of good family looking after sheep and fruit farms; they are, perhaps, ashamed at present to follow these callings in their own country, and therefore migrate for that purpose to America or Australia. Our way of looking at these things, however, is rapidly changing, and the old barriers between class occupations are breaking down and suffering readjustments. By these means the less capable sons of the upper and middle classes find a living in more suitable conditions of life, and they are not artificially supported by the wealth and prejudice of relatives and friends. In the same way increasing facilities are afforded to the more capable, who can now obtain occupation suited to their capacities. In no way is this better shown than in the construction of our new system of education. Distinctly, the modern tendency is to establish a ladder from board school to university upon which the capable can climb. Our older universities of Oxford and Cambridge have in great measure become teaching organs of the well-to-do and have drawn their potentiality to a large extent from these. The Scottish University has been the teaching organ of the whole people down to the small farmer, while the more modern development in Wales holds out university privileges to any member of the community provided with a sufficient amount of industry and intellectual capacity. Shall we not find that, as a result of this more open competition, the more capable workers will pass from those occupations which require the least skill, or which are in their nature unpleasant or injurious, to those pursuits which are of a more attractive nature? At present the innate qualities of a country labourer's child are probably not much below those of a squire's child because of the artificial barriers that have existed between the two. They are both of the same race originally, and it is difficult to say in which class selective influences have in the past been most powerful. Remove the barriers, give the smart boys of the labouring class a chance, and the residue will remain innately inferior to a marked degree. The tendency of modern development is often spoken of as democratic. This may be so in a certain sense; but does it not seem that we are tending to build up a new aristocracy of innate worth, an upper class of capables? The old system of keeping class separate from class in some degree preserved the innate equality of the classes. By open competition we establish a difference, and tend to readjust matters by standards of personal capacity. It may be arranged, possibly at some future time, that the personal possessions of citizens shall not vary in quantity so much as they do at present; in that case mere personal possessions will be little esteemed, and innate qualities of manhood and womanhood will make the chief difference—a truly organic one—between the upper and lower classes. The rapidity of this selection is, however, greatly retarded at the present time by another factor which must not be overlooked. The unambitious and not very capable man takes to some occupation requiring little skill, and rapidly earns the full current wage of his occupation. In consequence of this he marries and has in all probability a large family. His more ambitious brother, aspiring to a calling requiring skill or extended knowledge, undergoes a long apprenticeship or enters a profession. At first his wages are small and the requirements of his advanced position are considerable. Marriage especially is a drain upon his resources, for while his less capable brother is married to a woman who perhaps prepares his food and rears his family, his own wife bears him children, and perhaps suckles them, but is not prepared to perform any other useful function. He of necessity marries late in life and has a small family. Even within a single profession such as our own we see exactly the same thing taking place. The less ambitious student takes a low qualification and passes at once into general practice; he rapidly makes an income and marries. A more ambitious man will perhaps take a degree in arts or science, and then, having taken his medical qualifications, he will specialise. For years he will barely pay his way even as an unmarried man, and only, perhaps, in his later thirties will he be able to marry. While, therefore, we are drawing the more capable together into classes by themselves we are compelling them to be, relatively speaking, sterile. We set ladders from the board schools to the university; but while the smart boys are climbing, the dull ones are marrying and carrying on the race.

I must now conclude a very imperfect description of what, in my opinion, our modern phase of civilisation is doing for our race. We have seen that selection is the most powerful factor in evolution, and we have studied how the changing environment of to-day will modify the innate qualities of our nation. The picture I have drawn is perhaps a dreary autumnal landscape, but in drawing it I have tried to represent what I think I see. Perhaps the colouring is false, and it should have been painted in brighter hues. When we turn to the practical outcome of our study it seems to me that, provided we accept "selection," we are bound to endeavour to apply this remedy as a means for producing race progression, even if the present physical deterioration is not so great as I am inclined to believe it is. Even if there be no signs of deterioration at all, we have in selective agencies a certain and tried means of improvement, and we are certainly not surrounded by ideally perfect men and women; if we can benefit them, we are bound, as physicians of humanity, to attempt the task. In discussing how this may best be carried out we have not to consider what might conceivably be done, but rather what can actually be accomplished at present. Social problems are so complex and ever-changing that no practical man looks very far ahead; we cannot see into the future, for we are

[4] See D. Ritchie's Darwinism and Politics.

not able to foretell the kaleidoscopic changes of events and modes of thought that may arise. We have therefore to ask ourselves, What are the public prepared to hear and what advice are they prepared to act upon? I venture to think that it is not premature to ask them seriously to consider the question of segregation and also the prevention of the immigration of the criminals and incapables of other nations. The transmission of diseased and feeble strains is such a real and tangible evil—we all know so well of its existence—that all would be willing to prevent it. The public have been for some years accustomed to temporary segregation with a view to the prevention of contagious fevers, and they have for centuries been accustomed to self-enforced and permanent segregation dictated by religious enthusiasm. The latter has deprived the race of some of its best and noblest strains, whereas the segregation that is proposed will deprive it of some of its worst. I cannot but think that there is another and even more fundamental step that we can take. Two or three hundred years ago the lower classes were bondsmen more or less; their wages were arranged for them and competition for a better wage was debarred. The growth of a middle class, and the enforced treatment of the lower classes on something like rational lines, were due to effort and self-assertion from below. "Our rights" became the legitimate demand of the masses, and even to-day nine-tenths of us are more or less busily intent upon the same demand. In family relationships we find pretty much the same thing; the primitive idea of the wife as being the property of the husband, and over whom the man has rights, still survives, and only since the Matrimonial Causes Act of 1858 was it rendered impossible for a husband after deserting his wife to return and lawfully possess himself of all the property she had herself acquired during his desertion. The rights of the parent over the child commenced in primitive times, when the family formed a community united for common protection, with the parent or, if alive, the grandparent, at its head. The possession of children gave power and importance, and filial love and obedience were demanded by the parent as a right. Do not we find, however, that our views upon all these subjects are now undergoing a great change? The citizen feels that everyone is anxious for fair dealing, and that reasonable claims on his part are generally allowed in the end. He contrasts his position with one living in a more uncivilised community, or with his ancestors of a hundred years ago, and feels that he is better off than they. He feels, moreover, that he owes this not to his unaided work alone, but to the race of which he forms but one insignificant unit. He feels, or should feel, less anxious about his rights, but more desirous of fulfilling his obligations. So, too, with marriage and parenthood the same change is manifest, and, moreover, the obligations are being enforced by law. A man and woman in begetting a child are now forced to become responsible for its care and health;[5] but the wonderful and tenacious survival of our ideas of parental rights is well brought out by the fact that until 1891 a man could not by contract or neglect forfeit these rights. Before the Act to Amend the Law relating to the Custody of Children, of March 26th, 1891, a man who had deserted his children could afterwards insist on their returning to him, and, although a reprobate in every way, he could claim them from the parish or custodian that had been responsible for their upbringing. The enormous modern development of public law, especially that part of it which relates to sanitation, is another indication of the increasing obligation that is felt by everyone of us, and which, once felt and realised, becomes a public rule. Under these circumstances, does it not seem that the present is a fitting occasion to press upon the public the obligations incurred to the nation at large by those who become parents? The State now insists upon a parental regard for the external well-being of the child; may we not also insist that a parent is responsible for its innate well-being too? Once we have established such a point of view, once people have learnt to look farther ahead and realise how much of the happiness of the future depends upon their present action, I cannot but believe that this will affect their attitude in respect to marriage. Not only will the feeble and diseased realise fully the consequences of hereditary transmission and dread their consequences, but if they marry they will do so in face of public opinion—perhaps of public rule. Having aroused the public conscience on this subject, the sickly will with difficulty find mates, and sexual selection (marriage) will have more largely than at present the quality of the progeny in view. One is not creating new feelings here, for family pride and the pride of race is known to us already. One wishes to see more of it, not less; and to see what there is of it placed upon a more biological footing; one wants marriage not with a view to the amassing of acres, but for the perpetuating of fine physique. Somewhat on these lines I believe that we may reasonably expect to see an improvement in the well-being of the race. Man's present surroundings may safely be improved, and the sickly may have a longer life, but this consideration to the individual can only be given provided the race continues to be produced from the most robust and capable.

[5] An Act for the Prevention of Cruelty to and Better Protection of Children, Aug. 26th, 1889, and previous Acts.

ON PUERPERAL FEVERS.

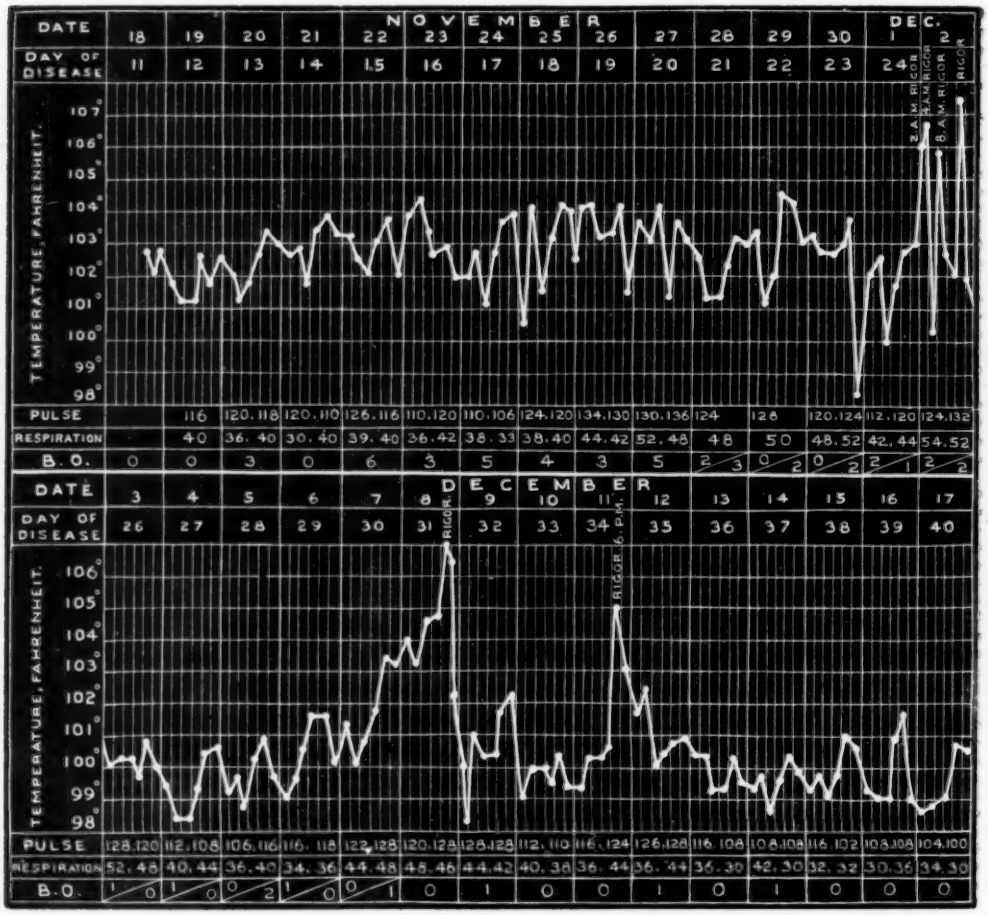
BY LOVELL DRAGE, M.A., M.D. OXON.,
MEDICAL OFFICER OF HEALTH OF THE HATFIELD RURAL DISTRICT, HERTS.

(Concluded from page 466.)

PATHOLOGY.

THE classes which have been named and the class which is about to be described have a pathological basis, and I am not prepared to recognise any which are not so founded. To illustrate these I cannot do better than give a case of my own. A woman twenty-two years of age was delivered of a male child after a perfectly natural first labour. The child was afterwards found to weigh 8½ lb., was propelled easily into the pelvis, and was only arrested when it came to the perineum. The arrest in the descent was not of long duration, and the child was born without any artificial aid. The perineum was, however, badly torn, and it was subsequently sewn up, two stitches being used. The presentation was left occipito-anterior. The placenta was born about thirty minutes after the birth of the child; it came away intact with the membranes naturally. The vagina was subsequently douched with a solution of corrosive sublimate (1 in 2000). The milk came into the breasts on the fourth day, and the temperature rose half a degree; after this there was no sign, except of exceedingly good health, till the ninth day. The stitches were removed from the perineum on the sixth day, and it was found to have healed. On the morning of the ninth day I found the patient complaining of pain, especially in the back. There were elevation of temperature and a pulse of good character (108). The respirations were normal. Nothing abnormal was discovered by digital examination. Bimanual examination was well tolerated and revealed nothing abnormal. The lochia continued to be normal, and there was no interruption in the flow of milk. Ill-defined pain was complained of, but it was never possible to localise it, and this persisted till the patient got up at the end of the month. I was unable to pay any attention to this complaint, because ever since she was sixteen years of age she had complained of pain which could never be localised or accounted for, especially at the periods. Indeed, she was one of those patients who are certain to complain of pain in any illness or even in health. I was strengthened in this opinion about the pain, because a careful bimanual examination did not enable me to detect the seat of it. The pain was never complained of as occurring in the same place two days together, and was complained of long after the patient was convalescent—not always, but at times. The patient was placed on a slop diet and ordered two grains of quinine every four hours. She was also given three grains of calomel at bed time and some effervescing saline medicine in the morning, and, as the bowels did not act, an enema was used subsequently to obtain relief. From first to last there was no sign or feeling of chill or vomiting, but there was distressing fever and some sweating at night. Considering the warmth of the weather, the sweats were not heavy. There was no diarrhœa, and the enema was used after the first administration of purgatives from time to time. The tongue remained fairly clean through the illness. The patient took nourishment well and with few exceptions slept well. Two days after the attack there was a slight failure of milk, and on the fifth day after it I decided to take the child altogether from the breast, in the interests of the mother. The child was not upset by the milk. The discharge on the fifth day, after

being quite normal, became slightly tinged with blood and remained so until it ceased in the fourth week after delivery. The patient made a good recovery and was allowed to get up at the end of the month after a careful examination had been made. Examination digitally and bimanually revealed nothing abnormal. Ten days after the attack the general want of strength and the appearance of the patient pointed to the fact of some general infection of the system. The probable pathology of the case can be elucidated by a quotation of some remarks made by Mr. Watson Cheyne relative to the researches of Dr. Doléris on septic puerperal infection. "On the other hand, the investigations of Dr. Doléris in septic puerperal infection in the human being are of great interest. He investigated two cases of true, intensely acute (*foudroyant*) sepsis, without other notable pathological appearances. His results would use up the oxygen during the death struggle or after death itself. Hence it is evident that Dr. Doléris has not found a septic bacillus which plays even in a slight degree a *rôle* such as that played by the bacilli of mice septicæmia." The next point to be decided is, Where was the nidus of the bacteria in this case? Two points in the case which have not been referred to specially are these: there were never signs of vein plugging during the first month, and the patient was very markedly hydræmic during the later months of pregnancy. During these there was for a short time a faint trace of albumen in the urine, but this was not found in the month before delivery, or at any time in the month after delivery. It must be added, however, that three months after delivery the patient stated that a swelling of the lower extremities to a slight extent had persisted from the time she returned to her usual habits. The fact that vascularisation of the



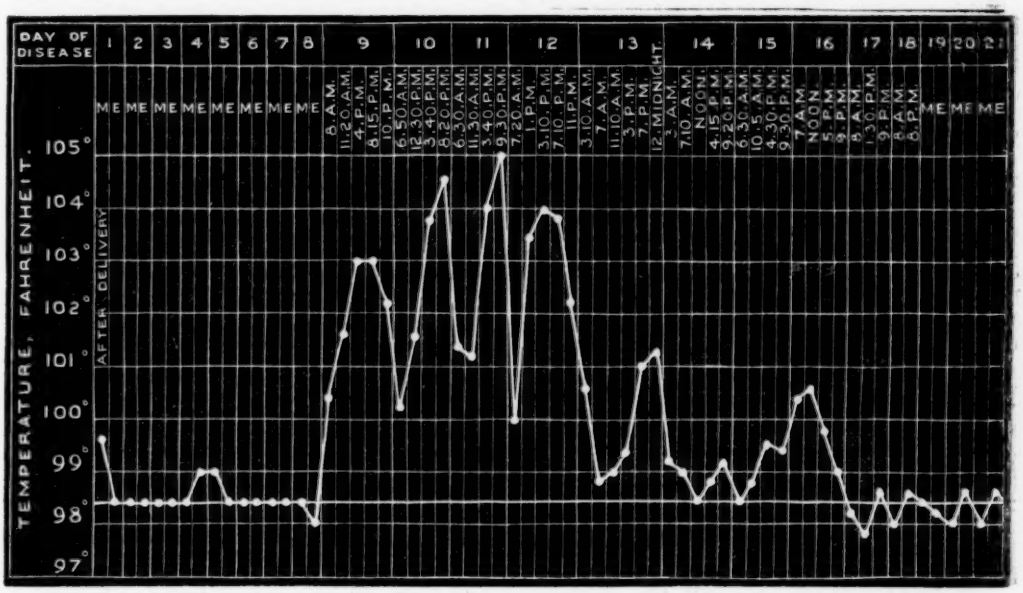
lead me to expect a sepsis caused by adiablastic bacilli. He says, however, that in this acute sepsis no organisms can be found in the blood till just before death, often only after death. Nor did he observe one form alone, but speaks of 'éléments allongés, minces, cylindriques, remuants,' which swarmed in the tissue and in the lymph spaces, in the uterus, and in the peritoneum. Dr. Doléris also found similar organisms in putrid infarcts and believes that one form can change into the other. He also considers the question under what circumstances the blood can become a suitable soil for these organisms. These circumstances are, firstly, absence of oxygen from the blood (anæmia), because this gas is noxious to the 'vibrion septique,' and, secondly, the presence of a mass of organisms outside the blood supplying it. The first conditions can only be fulfilled by the presence of other organisms—for example, the pyogenic cocci—which thrombi in the uterine sinuses was far advanced at the end of the first week after delivery has been alluded to, and the fact that the condition of the blood of lying-in women generally, and specially in this woman, is favourable to the formation of thrombi in the pelvic veins must be remembered. The thrombosis of the femoral vein which causes phlegmasia alba dolens is well known; hence it may be concluded that the nidus was a thrombus which had softened, the situation of which was such that it did not give rise to signs or symptoms of plugging, and the question arises whether the symptoms were produced simply by chemical poisoning or by the action of bacteria and the products of their life and growth. The latter view is to be preferred, for it is difficult at the present time to believe that the original process of softening is not produced by the action of bacteria conveyed to the thrombus by the blood, and it further appears probable that the

softened material makes a still better nidus for the growth and development of one or other members of that group of organisms.

The following are the notes of a case of thrombosis of veins during an attack of enteric fever which have been kindly given to me by the senior physician of St. Bartholomew's Hospital, Dr. W. S. Church :—

"Nov. 18th : The patient was admitted on the eleventh or twelfth day of illness.—19th : He has passed a fair night. The lips and hands are tremulous and the abdomen is distended ; two suspicious spots are present.—20th : He wandered much during the night. Fresh spots have developed —22nd : Eight grains of phenacetin were given, as the temperature had reached 104° F. on three consecutive days. Three ounces of brandy were prescribed.—24th : The brandy was increased to four ounces.—25th : An opium enema was administered to try to allay the purging.—26th : The patient was cold-sponged, which was followed by slight shivering, but it did not lower the temperature. He complains of slight pain in the left knee. There is no œdema of the feet. The pulse is very feeble. The patient is dusky. Four ounces of whisky and three ounces of brandy were ordered. A draught of ammoniated ether was given. The patient's lips are pale and dusky.—30th : The pain in the left leg is worse. He is drowsy, being in a condition of muttering delirium.—Dec. 2nd : He had three rigors during the night and early morning. He passes urine under him. The left leg, foot, and thigh are œdematous. There is no thrombosis of the femoral vein, but some tenderness along the course of the sciatic nerve is present. There is no consolidation in the lungs, but a few râles are to be heard. Since the 28th the patient has been taking liquor strychninæ (seven minims) every six hours ; he has now been put on quinine (taking seven grains every six hours) and brandy (ten ounces).—3rd : He is restless, having had a severe rigor last night, and is wandering in his mind a good deal ; there is much œdema of the left leg ; he passes urine and fæces under him.—4th : The patient was very noisy in the night, being extremely ill. He has had no further rigor ; there is much less œdema of the leg. The quinine has been stopped and the strychnine resumed. Nutrient injections are made every three hours, ten minims of tincture of opium being administered with the one at 2 A.M.—5th : He has passed a better night. The leg is less swollen and is decidedly better ; he takes food by the mouth well.—8th.—The patient remained much in the same condition, but slowly mending, until this date, when he had another rigor and rise of temperature to 107° ; there was an increase of pain in the left leg, but not of swelling. Some boils appearing on the back, I ordered the quinine again.—Dec. 10th : The patient was very restless last night, talking incoherently ; many pustules are to be seen scattered over his back. The œdema of the legs has not increased.—11th : His mental condition is curious ; he has delusions. A rigor occurred this evening ; fresh pustules are developing, a bedsore is forming on the right hip, and there is more swelling of the left leg. From this time he gradually improved. His mental condition was curious, as he had delusions. He complained much of pain in the left leg, and morphia was occasionally required at night to relieve it. No fresh pustules developed after the 13th ; there was a bedsore on the right hip. The slough separated on the 14th, and it was completely healed by the 30th. He took quinine, three grains, every six hours, from the 10th to the 20th. The brandy was reduced gradually. He left quite convalescent on Jan. 20th, but has subsequently had trouble with his left leg, there being considerable œdema and stiffness."

The symptoms noted are naturally much more severe than in my case, but an examination of the chart will show the very grave constitutional disturbance which is produced when a thrombus softens. In Dr. Church's case the patient was already exhausted by a severe attack of enteric fever. In my case recovery from the lying-in had proceeded with absolute safety for eight days. The patient was in good health, with the exception of being in the puerperal condition, that condition consisting primarily in a large system of organs undergoing the processes of waste and repair, a condition of blood favourable to the growth of bacteria, its solid constituents being diminished and the water increased, and there being a general excess of the products of waste. The temperature chart of my patient and my history of her case show, I think, that there was no reason to suspect infection from the side of the generative passages, and the date of the attack was later than that usual in cases of venous puerperal septicæmia. The treatment of the case, which was entirely successful, was based on the researches of Dr. Doléris and the conclusion that the symptoms were due to sepsis, the nidus of which was a softened clot. On the fourth day of the attack, when the condition of the patient did not improve, ten grains of quinine were exhibited in the interval, a bed was made up in the garden, and the patient was removed from her bedroom to it. Thirty drops of the liquor ferri perchloridi with five grains of carbonate of ammonia every four hours were prescribed. That was the first afternoon that the temperature did not show a rise. On the following day no quinine was given in the interval, and on the day after that, as the temperature still showed a marked evening rise, fifteen grains were given in the interval, and another dose of the same strength was repeated in the morning two days later. The dose of iron was gradually diminished one week after the day of the attack. It may, of



course, be objected that the disease ran its course quite irrespectively of treatment. I am not of this opinion; but, whether it did or not, I have shown its basis—namely, fresh air, sunlight, and quinine to check the growth of the bacteria, and iron to strengthen the blood cells against their attack. The patient was nearly the whole of the day in the open air, from the fourth day to the end of the month, with a few exceptions when the weather was unfavourable. A final point is that I continued my maternity practice without any other cases of sepsis and conducted a difficult instrumental case while in the very middle of this one.

PREVENTIVE TREATMENT OF PUERPERAL FEVERS.

From a consideration of the bacteriology of this subject it appears certain that there is no specific bacterium which causes the sepsis, and that in view of the modification in structure and in function which bacteria undoubtedly undergo through variations in their surroundings and in the presence of other members of their own species it appears more reasonable to pay attention to the possibility of the mother affording a nidus for their growth than to the bacteria themselves. These exist everywhere, and, do what we may with antiseptics, it appears to me idle to suppose that we can do any more than take the greatest precautions of which we have knowledge against their introduction into the generative passages. This can be done by avoiding repeated examinations during the progress of labour, and by strict attention to cleanliness of the hands and instruments, and of the patient generally, both during and after delivery. It is quite easy to understand that if any of the pyogenic cocci are introduced into the mother at the time of delivery sepsis will almost certainly result, but, short of this, it is probable that the bacteria which are introduced during the progress of labour, along with the air or otherwise, are unlikely to grow unless a nidus for their growth is ready for them. I have said nothing about douching with antiseptics after delivery. Now I place very great stress upon this, but I do so not on account of their germicidal powers, but because the douche removes at once placental or membranous débris and blood-clot, and generally cleanses the passages. Moreover, if a strong antiseptic like corrosive sublimate (1 in 2000) is used, great care must be taken in squeezing out the uterus, clots being thus driven out, and firm contraction is generally obtained. Douching during the lying-in is, I believe, an advantage, but it is not of so much importance as it is when used immediately after delivery, and should never be allowed in the absence of a skilled and trustworthy nurse. I have very keen recollection of a case of fever which occurred early in my practice. The nurse asked me whether I liked the douche administered, and I told her, "Yes, one of Condy lotion every day." About the fifth day a rise of temperature made me inquire into everything connected with the case. Finally the syringe was produced; it was old enough and dirty enough to have poisoned a town. The douching was discontinued, immediate abatement of the fever following, and from that time to this I have never allowed a patient to be douched by a nurse until I have inspected the apparatus and examined the nurse orally as to her knowledge. In case the douche is administered daily during the lying-in, either Condy lotion or one teaspoonful of tincture of iodine in one pint of water should be used. I do not think it either necessary or desirable to use the sublimate douche except immediately after delivery, unless there are special reasons.

The next point to pay attention to is the proper emptying of the uterus. In case of reasonable suspicion existing that a piece of placenta is left behind, an examination of the uterine cavity should be made, and, if the suspicion is well founded, steps should be taken to remove what remains, great care being taken to avoid unnecessary injury. I said reasonable suspicion, as I do not think that the uterine cavity should be explored as a matter of routine. Portions of membrane are not infrequently left behind, and in these cases care should always be taken to remove every portion which can be felt digitally hanging from the os uteri; but I do not think it desirable to hunt about in the uterus for a mere shred of membrane. Such shreds are usually expelled in the lochia, and cases are rare in which a small shred, such as I described in the case quoted above, gives rise to untoward symptoms. A great deal of trouble will be averted, I have found, by an avoidance of interference with the third stage of labour. I have long since given up the routine practice of giving ergot after delivery and forcing the placenta by active compression of the uterus. All I do now is to await a pain and gently press the uterus with my hand. Then I wait for another pain and do the same, and so on until the uterus, with very little assistance from me, expels the placenta. I have found very much less difficulty with placenta and membranes since I have adopted this practice. I am not, of course, referring to cases where abnormal conditions, such as excessive hæmorrhage, present themselves.

The management of the second stage of labour is also of importance, and very great importance; but to deal with this is outside the limits of this dissertation, and I must merely state that when interference with the natural course of labour at this stage is necessary this interference can only be carried out with safety when a correct diagnosis of the cause for its necessity is made and when the necessary steps of the interference are carried out with a knowledge based upon an acquaintance with sound principles. It is my own experience and that of many others that it is not the cases in which artificial interference with the course of labour occurs where puerperal fevers most frequently appear during the puerperal period, but I have no doubt that artificial interference is very frequently the cause of puerperal fevers. Why is this? It is because wounds of the maternal passages can be so easily caused when artificial interference is resorted to. Lacerations of the perineum are of everyday occurrence, whether instrumental aid is resorted to or not, and in view of what has been said of the pathology of puerperal fevers it follows that it is of the utmost importance that they should be at once closed. In closing perineal wounds silkworm gut will be found to be the most satisfactory suture, and any large curved needle will be found sufficient; it must, however, be borne in mind that it is necessary in any important laceration to pass the needle right round the tear, so that it never pierces the wound itself. A smaller point to be observed is that the sutures should not be tied tightly. The methods of closing a perineal laceration which extends into the rectum I do not propose to discuss. I have never seen one in my own practice, but such lacerations occur under some circumstances in any hands; it is sufficient to say that they should be closed. Attention should be paid to the lying-in room; it should be airy and have no more furniture in it than is absolutely necessary. The nurse should be thoroughly trained in habits of cleanliness and the use of antiseptics; she should not be allowed to nurse if she has any open sore or suppurating wound or if she has ozæna or necrosis of bone.

It will readily be understood from what has gone before that the first point is to ascertain the cause of the fever and to remove it if possible. I have fully explained the principles of treatment which I advocate in cases where the cause is not removable, as in the case of the softening of a thrombus. One general point on which stress must be laid is this—namely, the necessity of free evacuation of the bowels in the very first stage. Many of the older authorities laid very great stress on the importance of this, and nature will not infrequently try to relieve herself in this way without artificial aid. Calomel is the drug which I prefer, and, failing this, where the condition of the patient is suitable, the compound jalap powder in one-drachm doses will be found of use. So much, however, depends on the condition of the patient that no general rules about drugs can be laid down. As to the value of free evacuation I have no doubt. After this the value of iron in full doses should be recognised, and it is to be recollected that quinine is exhibited with best advantage in one full dose during the interval of fever where such exists. The value of fresh air and sunlight cannot be overestimated, and it is satisfactory to find that theory and practice are at one on this point.

HISTORICAL REMARKS AND CONCLUSIONS.

Old literature abounds in discussions of these fevers. I am indebted to a "Treatise on the Puerperal Fever," by Mr. Hey, jun., published in 1815, for an insight into the methods of thought in regard to it and for a description of epidemic puerperal fever. From this and from writings by others I am unable to come to any other conclusion than that an epidemic of a fever of this kind will run exactly the same course, when unchecked, as will epidemics of other zymotic diseases. There is the first period, in which sporadic cases appear, a second period of extreme virulence, a third period in which a lull occurs, and then, perhaps, another outbreak. Anyone who has watched epidemics will be aware of this course. With most of the zymotic diseases, however, we have not the conditions so much under our control as is the case with puerperal fevers; notwithstanding this, it is of comparatively recent

years that the methods of preventing the disease have become well known. So long ago as 1774 Dr. Kirkland [1] showed that puerperal fever is not the result of inflammation, but that it may be produced by the introduction of an animal poison into the circulation. Other writers who held this same view were Dr. Fergusson, whose three positions respecting the source and nature of puerperal fevers are: (1) the phenomena of puerperal fever originate in a vitiation of the fluids; (2) the causes which are capable of vitiating the fluids are particularly rife after childbirth; and (3) the various forms of puerperal fever depend upon this and may readily be deduced from it. Dr. Rigby, writing in 1844, goes further: "We do not agree with him [Dr. Fergusson] in supposing that every form of puerperal inflammation is produced by vitiation of the circulating fluids." It was his opinion that it may be produced directly by the absorption of putrid matter into the uterine veins and lymphatics, "exciting inflammation in these vessels." Dr. Fergusson in his work (page 75) refers to the comparison made by Van Swieten and Dr. Kirkland of the state of the uterus with that of an open wound, and to the fact that Professor Schönlein considered that the contagion of puerperal fever has the greatest similarity with hospital gangrene. Cruveilhier, quoted by Dr. Fergusson, says (page 78): "The causes of puerperal disease which have been enumerated by Cruveilhier apply almost solely to those inflammatory infections of the puerperal state which do not depend upon a vitiated state of the circulation, but are derived from the changes induced by parturition and are dependent on (1) the organic changes induced by pregnancy; (2) those induced by the act of labour; (3) those consecutive to labour." Semmelweis, who was at work in Vienna in May, 1847, after careful investigation, found that by causing the students to wash their hands in chlorinated lime water the mortality from puerperal fever was reduced from 12 per cent. to 3 per cent. in six months; and he came to the conclusion that in every case of puerperal fever the cause is decomposing animal matter, and that therefore puerperal fever is not miasmatic, but a septicæmic or pyæmic condition. Dr. Boxall in 1890, in a series of papers read before the London Obstetrical Society, has further demonstrated by a number of observations made in the General Lying-in Hospital during a period of seven years from July, 1882, to June, 1889, that so far as puerperal sepsis is concerned a gradual improvement results, partly from systematic attention to points of general hygiene in the hospital, and partly from practice in dealing with the antiseptic used; and that a further improvement is effected by the substitution of sublimate for carbolic acid and Condy's fluid as the general antiseptic in use, but that retrogression occurs both when the sublimate douche is reduced in strength and when the sublimate of the douche solution is replaced by salufer. He further concludes that as an antiseptic agent sublimate is superior to carbolic acid and Condy's fluid, and also to salufer, and that as the antiseptic of the douche solution is the only element which suffers variation the value of strong douche solutions, compared with douche solutions of weak antiseptic power, and, *a fortiori*, the value of antiseptic compared with mere aseptic douche solutions, is rendered obvious. Although the knowledge of what is the cause of puerperal fevers has been so long known, though expressed differently to what it would be now, a satisfactory knowledge is perhaps not general. Taking the discussion at the Obstetrical Society of London in 1870, it cannot be asserted that the opinions expressed showed anything like a reasonable knowledge of the causation of puerperal fevers. Again, the recent discussion at the meeting of the British Medical Association showed that there was yet some work to be done on the subject. Nothing has been said of many of the older opinions connected with these fevers; so much has been written that it would take a volume to write an account of the various ideas formulated on the subject. Coming to recent years, the work of such men as Dr. Greenfield, Professor Pasteur, Mr. Watson Cheyne, Professor Lister, and other bacteriologists and pathologists has made more correct ideas possible. The position taken up in the matter is practically this. Puerperal fever depends primarily on conditions connected with the mother. Delivery, even of the most favourable kind, provides a nidus for the growth of bacteria, but deliveries after which what may be called refuse material is left behind, or during which wounds of the maternal parts are produced, or lyings-in accompanied by venous thrombosis or embolism, afford specially suitable nidi for the growth of bacteria.

[1] Treatise on Childbed Fevers, p. 70.

The class of bacteria, as I have pointed out, have a definite position in natural economy—that of the breaking-up of dead animal and vegetable substances. From the purely saprophytic forms, by the process of natural selection, other forms develop. Of these a number produce disease in the human body, of which some by exposure to fixed conditions for a length of time have acquired fixed characteristics, both structural and functional, and these are those which cause such diseases as scarlet fever. Other forms, like those which produce sepsis—at all events at the present day, because the conditions which are necessary in the human body for their growth are better known and consequently dealt with—have not such fixed characteristics, either functional or structural. The variations, therefore, in the symptoms which they produce are much wider than those of the zymotic diseases: not that there are not great variations in the symptoms of zymotic diseases, because they also are wide, but not so wide as in cases of sepsis. An attempt has been made in this dissertation to show the complications which present themselves when the question of sepsis is considered. An endeavour has also been made to demonstrate that the prevention of septic fevers is to a large extent dependent on the care taken of the woman from the advent of her labour to the close of the lying-in. Notwithstanding the efforts to save the woman from harm, accidents, as in surgery, occur; but these, with our present means of treatment, can, if the cause of the disaster be discovered, be prevented in not a few cases from terminating disastrously.

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Hatfield, Herts.

A SUMMER CLINIQUE IN THE APENNINES.

BY W. W. BALDWIN, M.D.

II.

WHILE I would not place drugs above the more important uses of pure air, pure water, and wholesome food, I do believe that in wise and judicious therapeutics there is often a means of averting disaster and even of saving life.

My second patient formed a good example of the fact that while diagnosis, or the labeling of disease, is truly of primary importance, its treatment has claims on the physician's intelligence which sometimes are not so freely acknowledged. The patient was a boy three and a half years of age with empyema of the left pleura, probably of tuberculous origin, which had opened spontaneously in the eighth intercostal space. There were no complications. An operation was advised, but when its nature and extent were explained the parents would not consent. It seemed hopeless to undertake anything less than a thorough clearing out and disinfection of the pleural cavity, with free drainage, considering what a miserable state the child was in, owing to septic absorption. As nothing had been attempted, however, directions were given to feed him, every three hours, with milk, eggs, toasted bread with plenty of butter, and two or three small glasses of good red wine daily, to give him a sponge bath with tepid salt water every morning, and to keep him in the open air as much as possible. He was clothed in flannel underwear from head to foot, and a dry, well-aired sleeping-room was selected. The mother was instructed to remove and burn the cotton-wool dressing whenever soiled with discharge and

to wash the parts with disinfectants before renewing the same. A soft rubber catheter was introduced through the fistulous opening, and the pleural cavity was flushed out as well as possible with a solution of iodide of mercury. The hypophosphites of lime, iron, and quinine were prescribed in liberal doses. After ten days the patient began to improve, and on Sept. 18th he had gained so much in colour, flesh, and strength as to be hardly recognisable, and he was walking the first time for months. The parents were now anxious for the operation to be performed, but I was obliged to leave the next day. They were promised future treatment in Florence if necessary, but I have since heard that the child continued to improve.

Case 3 was the wife of a *pigionale* (day labourer who pays rent). She was twenty-eight years of age. Two months and a half before she had aborted in the third month. As is usual with these women, she left her bed upon the third day to work, and the hæmorrhage went on more or less until she came to the clinique, and when there she objected to an examination. Appropriate diet, hygiene, and the compound pill of hydrastia muriate were prescribed. After a week the hæmorrhage had ceased, and an examination was allowed, but nothing abnormal could be found in the uterine canal. Tincture of chloride of iron and nux vomica were then given, and the patient gradually recovered. This woman, by-the-bye, brought in her arms—the fourth case—a poor little waif fifteen months old from the Foundling Hospital of Florence. These *innocenti*, as they are called, are boarded out for a pittance with the poor country people, who are glad to earn anything. In some parts of Italy these little ones are called "children of the Madonna" because "they have no other mother." I have yet to learn of an instance where one of these pathetic little creatures has ever been treated but with the most touching tenderness and devotion. Instances of cruelty, however, to children are not wanting among the working and middle classes. Thanks to Anglo-American initiative, societies for the prevention of cruelty to animals have been established throughout Italy and are relatively successful, but nothing practical of this kind has been done for children. "The existing laws are inadequate and inefficiently administered." I quote from an admirable article in *La Nazione* of Dec. 29th, entitled "For the Innocents," which every lover of children should read and ponder. Here would be an ideal field and scope for the misplaced zeal of our meat-eating anti-vivisectionists. The woman had the true Madonna face, which one still sees sometimes in the Tuscan country and in old pictures. Her meagre life of privation and toil, and facing the wolves of hunger and cold during all those bitter mountain winters, had not robbed her of a certain celestial grace, of which sweet reasonableness and patience are a part. The child had the common gastro-intestinal catarrh of the country, caused by the diet of *pappa* (boiled bread, olive oil, and salt), which is given to infants before they are weaned, and forms their exclusive diet thereafter until they are two or three years old. It had also passed numbers of round worms. A diet of prepared milk and powders of salicylate of bismuth were ordered. The diarrhœa and vomiting gradually ceased, and, the child having vomited three round worms, santonin (1 gr.) was administered three times daily and the salicylate of bismuth was given less frequently. The child passed more than a score of worms and grew quite fat and rosy upon its milk diet and hygiene. This good woman's own child, thirteen months old, was afterwards treated for similar troubles with the same satisfactory result. She said to me with an ineffable smile, "It was right to cure God's child first."

Case 5 was that of a stout peasant woman forty-five years of age who had borne eight children, five of whom were living, but three had died in childhood from "gastric disturbances." She complained of the usual climacteric troubles of her age and class, but with more flatulent indigestion and less menorrhagia than were present in Case 1.[1] She was also very hysterical. The same careful directions as to diet and hygiene were given, and an old-time pill of aloes, iron, and assafœtida was prescribed. This patient did very well indeed for a while until the novelty of being treated wore off, when she dropped back into the old vicious circle of hysteria and resumed a constant litigation for supremacy among her neighbours in the "enjoyment of poor health." What physician does not recollect with melancholy this type of patient? But the Italian sufferer would clear the field of her northern rivals with her unsurpassable richness of invention and fervid eloquence of relation. Poor creature, we could not prescribe fortune and opportunity, therefore we cannot boast that she reflected much credit upon our clinique.

Case 6 was the veritable old crone of the big porridge pot in the witch's kitchen,[2] and truly it was not hard to believe that she was a witch herself—a peasant woman seventy-six years of age with failing compensation in an old mitral insufficiency. She had great ascites, congestion of both lung bases, enlargement of the liver and spleen, and flatulent indigestion, with obstinate constipation. The pulse was rapid, weak, compressible, and irregular. Careful directions were given as regarded diet and hygiene. The bowels were thoroughly cleared out by means of a calomel and colocynth pill and then kept in order by a vegetable laxative tabloid. A digitalin granule (1 milligramme) was given every four hours at first, and then two or three times a day. Two grains of nitrite of sodium were also ordered every three times to relieve the overloaded venous system. The twenty-four hours' urine was carefully measured and examined several times. There was some albumen, but no evidence of kidney disease. The average daily quantity was 760 c.c., the specific gravity 1028, with a copious precipitate of urates. With a dry skin this patient was taking over 1200 c.c. of liquid daily. The importance of limiting the daily consumption of liquid in such cases to the average quantity excreted until the waterlogging is relieved needs no argument. The patient was not kept in bed because of the condition of her dark, damp room; and the exceeding toughness of her fibre, which had carried her through seventy-six years of incredible hardship and peril, seemed to make it safe to compromise and recommend an extemporised couch in the open air during the sunny hours. The temporary success, at least, of this treatment was eminently satisfactory. The ascites disappeared, the lung bases cleared up, the digestion improved, and the kidneys began to excrete above 1200 c.c. of urine daily. At this time the allowance of liquid was increased. The heart's action was slower, stronger, and more regular, and the jugular pulsations had almost disappeared. Whether the patient will survive the present bitter mountain winter is an anxious question, but I have just heard that she continues "well."

Case 7, a charming old peasant woman, sixty-six years of age, with a sweet benignant face, was suffering from advanced gastric carcinoma. Although one cannot treat such cases successfully, at least they can often be relieved of the more distressing symptoms. For the pain and sickness a tabloid of cocaine, menthol, and codeine was prescribed half an hour before eating, and to relieve the obstinate constipation a pill of aloin, strychnine, and belladonna was given. She was directed to take milk and lime water every two hours, substituting a soft-boiled egg occasionally. At her second visit she had been so much relieved as to entertain great hope of recovery. Her patience and goodness were remarkable. There was no cringing or fawning effusion of pretended gratitude, but she expressed her thanks with simple, self-respecting dignity, and so touchingly that the service done her seemed to be very small in comparison. "May God reward you. 'Tis a great grace to have sympathy for the poor. I thank you." She died in October, and at the last sent me a message of thanks and goodwill.

The eighth case was that of a peasant girl seventeen years old. She was a classic example of chlorosis, with amenorrhœa, palpitation, and breathlessness upon the slightest exertion, added to lack of appetite and chronic constipation. The blood could not be examined for lack of apparatus. For the constipation a pill of aloin, strychnine, and belladonna was ordered at bed-time, and peptonate of iron and manganese were given three times a day. As soon as the bowels were regulated draughts of fresh spring water in the early morning and sponging the body with cold water were gradually substituted, with an excellent result. Blaud's tabloids were then given in doses of from 6 to 9 and 15 daily. She seemed to be perfectly well on the date of her last visit, having menstruated once quite normally. She was advised to take the iron for another month, in decreasing doses, and to continue the diet and hygiene indefinitely, and she was cautioned not to expect a cure under a year or more, but upon any return of the symptoms to take iron again. This patient closed the work of the first day.

On July 25th sixteen patients presented themselves.[3]

Case 9 (I numbered the patients continuously and without

[1] Vide THE LANCET, Feb. 17th.

[2] Vide THE LANCET, Feb. 17th.

[3] It is my intention only to record such cases as give an idea of the prevailing maladies of this region, and hereafter only brief mention will be made of such as are a repetition or have no special interest.

daily intermission), a day labourer thirty-six years of age, complained of indigestion, constipation, headache and pain in the right knee from a bruise. A little nux vomica for his stomachic troubles and a liniment were given him. Case 10 was a boy twelve years of age with chronic malarial toxæmia, contracted in the Maremma, where many of these people work during the winter and early spring. His spleen and liver were enlarged, and he still had occasional attacks of intermittent fever; the tongue was foul and the bowels were obstinately constipated. He was somewhat jaundiced and the movements of the bowels were clay coloured and very offensive; the urine showed traces of albumen and contained abundance of bile, salts, and pigment. Diet and hygiene were ordered as a matter of course. The liver was gently stimulated with quarter-grain doses of compound cathartic granules (United States Pharmacopœia), and daily inunctions of red iodide of mercury ointment over the liver and spleen and a pill of quinine, iron, and arsenic three times a day were ordered. This treatment was continued until September, and the patient steadily improved under it. At the date of his last visit the spleen, although still enlarged, was about half its former size, and there was no discoverable enlargement of the liver. His digestion and bowels were in good order, the jaundice had disappeared, he was stouter and much less anæmic, and the intermittent fever had not recurred. Doubtless there is room for argument as to the length of time medical treatment should be continued in these cases, but certainly much can be accomplished towards relieving the damage already done to the organism by the malarial poison and to prevent future acute attacks by patient, persistent, and judicious "specific" treatment, long continued. In this case directions were given to continue the iron, quinine, and arsenic twice daily, six weeks longer, and then, with occasional intermissions, for at least six months, and above all to continue the diet and hygiene indefinitely, but to omit the liver granules and inunctions. One is loth to trust uncontrolled amateur instincts with such seductive and powerful remedies.

Case 11 calls for no notice. Case 12 was a feeble, anæmic peasant boy sixteen years of age. Some months before he had been confined several weeks in bed with a severe attack of acute articular rheumatism, which, fortunately, had not compromised the heart. At this time he had been ordered salicylate of soda, which caused, however, such nausea and distress that he was obliged to discontinue it, and no further treatment had been given. At the time of his visit he was crippled by subacute inflammation in the knee and elbow-joints, and was generally in a most miserable condition from rheumatic cachexia and lack of proper food. I have never found milk to disagree with these cases, although, having had my attention called to its theoretical contra-indication in rheumatism on account of lactic acid fermentation by various writers, I have taken great pains to observe its effects. This lad was ordered abundance of milk, eggs, and wheat flour prepared in the usual way, and toasted bread with butter. He was told to wear flannel underclothing. Domestic weaving is not yet a lost art in this primitive region, and various excellent hand-made fabrics and the best of knitted foot-wear are manufactured in almost every peasant household. These are to be had for a very modest price in cash or barter. Ten-grain salol powders were given to him three times a day, with bicarbonate of potash, and a 4 per cent. salicylic acid liniment was directed to be well rubbed into the affected joints morning and evening; twenty drops of a neutral tincture of iron chloride were also given, well diluted with water, three times a day. Under this treatment he made constant and satisfactory improvement, and in September seemed to be very well indeed. At this time he was taking the salol once daily, but he had continued the full dose of iron, which agreed with him admirably, without producing constipation. Great pains were taken to teach him how best to avoid the perils and accidents to which his rheumatic organism would be exposed in that trying winter climate. As he was a clever, intelligent lad, doubtless he will obey the instructions given him.

Case 13, a strong peasant nineteen years old, was also suffering from malarial poisoning, acquired in the Maremma. His case was more acute than that of Case 10, but he had a far more robust and vigorous constitution and a better family history. The spleen and liver were only moderately congested, the bowels were regular, the urine contained no trace of bile salts or other abnormal products, and the patient was apparently not anæmic. During four seasons in the Maremma he had never suffered from fever there, but after returning to his mountain home attacks of intermittent fever had always occurred in seven or fourteen days with the exception of the first year. The first attack had been of the pure tertian, and the second and third of the double tertian type—viz., a severe chill about four o'clock in the afternoon, succeeded by high fever, headache, &c., and a profuse night-sweat, every other day. The attacks upon the intervening days were always much lighter, but occurred at about the same time. Two-ten-grain bisulphate of quinine powders were prescribed at 12 noon and 3 P.M. each day. After ten days of this treatment the only result obtained was to change the double tertian into the tertian type, with milder attacks, but no further progress was made until arsenic and calomel, in small doses, were added, and the patient had left the sunny fields to work under cover. After this he recovered in a few weeks without further incident, excepting one severe attack after walking for three or four hours in the sun. As soon as the intermittent attacks had been broken up, quinine, arsenic, and iron were given and continued for more than two months. I have just heard (Jan. 10th) that this patient has remained perfectly well.

Case 14 was a housemaid, of peasant origin, twenty-nine years of age, suffering from lack of food, anæmia, and hysteria. Case 15 was an apparently robust, well-nourished peasant girl ten years of age with a most offensive discharge from the nose, which her mother dated back two years. The sole treatment had been to sniff up cold salt water daily. After thoroughly cleansing the parts by means of a douche and warm alkaline solution a careful examination of the anterior and posterior nares was made with appropriate instruments in a good light. Extensive ulceration and destruction of the posterior and middle turbinated bones had taken place, but the nasal septum was intact. The second teeth were sound, strong, and well formed, the Tuscan peasants generally having beautiful teeth. The child was then stripped and examined carefully from head to foot, but nothing abnormal was discoverable, although the process was very suspicious of syphilitic infection. The family history was unusually good; the father and mother, strong, robust peasants, had a clean record, and the six brothers and sisters, two younger and four older, had always been well. The only suspicious circumstance was the fact that the mother had taken an *innocente* from the Foundling Hospital of Florence some three years before in the usual way, and the little one had died from "scrofulosa" after a few months. As well as one could judge from the woman's confused relation "scrofulosa" might have been congenital syphilis. Lacking positive evidence, however, it was decided to treat the case tentatively as non-specific. I might add that careful bacteriological examinations of diseased tissue removed for that purpose were made with negative results as regarded tuberculous infection. Careful directions were given as to diet and hygiene, and a daily sponge-bath with tepid salt water, to be followed by vigorous friction, was ordered. Iodide of iron and cod-liver oil were prescribed in liberal doses. The parts were thoroughly cleansed each day at the clinique by means of a douche and warm solution of thymol and biborate of soda, certain crusts and bits of tissue débris being carefully removed with curved forceps. The parts were then dried with pledgets of antiseptic cotton and well sprayed with a solution of liquid vaseline, salol (4 per cent.), and menthol (5 per cent.), with the result that the evil odour entirely disappeared in two weeks, the ulceration was checked, and healthy granulation began to appear here and there. This treatment was continued uninterruptedly until Sept 18th, when the parts had healed satisfactorily with the exception of an ulceration at the base of what remained of the right posterior turbinated bone, which was, however, covered with healthy granulations. The mother, an unusually clever, painstaking woman, had been carefully instructed as to the *modus operandi* of the local treatment, and we were compelled to leave the case under her care. She was cautioned not to give the stream too much head in irrigating the parts, in order to avoid invasion of the middle ear with the solution. This accident is very liable to occur and sometimes causes serious inflammation. Case 16, a peasant girl ten years of age, had an offensive discharge from both ears, which had begun five years before during an attack of scarlet fever. The only treatment prescribed had been to fill both canals with oil and glycerine and to insert a plug of domestic cotton wool pulled out of an old bed-quilt. After carefully cleansing the ears with a large syringe and warm boric acid solution, clearing out meanwhile masses of cheesy débris with the assistance of an ear spoon,

several large polypoid granulations were removed with the wire snare, and the remainder were touched with pure tincture of iron chloride.

Case 17, an infant seven months of age, had been weaned two months before and a diet of *pappa* substituted. The child was suffering from subacute entero-colitis, aphthous stomatitis, and the usual digestive disturbance. It seemed to be a hopeless case, so extreme was the emaciation from inanition, and so profoundly had its organism been poisoned by intestinal toxines. A dessertspoonful of prepared milk was ordered every half-hour, with ten drops of blackberry brandy. The colon was irrigated daily at the clinique with a warm saline solution, and the mouth was carefully and frequently cleansed with chlorate of potash and glycerine. In spite of my very gloomy prognosis this little one soon began to improve under the treatment and was discharged as well on Aug. 22nd, when it was taking an appropriate quantity of prepared milk every three hours. Had the child been treated in a city, however skilfully, I do not believe that its life would have been worth three days' purchase, but in that pure, radiant atmosphere almost any cure seemed possible, as my further experience taught me. Case 18 was a peasant boy eight years of age who had been suffering "for more than a year" from intestinal catarrh and round worms, of which he had already passed large numbers at various times. Upon an appropriate diet and santonin he recovered from both troubles in a few weeks. In the meantime he had got rid of more than sixty worms. Case 19 was a spare, robust, but very anæmic peasant woman forty-two years of age, who had borne seven children, four of whom had died in childhood from diphtheria; she complained of constant menorrhagia and "gastric disturbance." Upon examination a small polypus was discovered half hanging from the os uteri, attached about a quarter of an inch above, to the right side of the uterine canal. After thorough disinfection of the parts this was removed with the wire snare, and its base was cauterised with a large probe heated in an alcohol flame. A week later the polypoid granulations, which extended to the internal os uteri, were removed with a curette which we had extemporised from a piece of steel wire in a neighbouring blacksmith's shop. These measures, together with approhriate diet and hygiene, sufficed to bring about a satisfactory result in this case. Case 20 was a stout, robust peasant girl who complained of nothing but absence of menstruation for over three months. It was thought best to give general directions and to wait for further developments. I have since heard that this patient has married and given birth some four months thereafter to a healthy male child. Case 21 was an anæmic servant-girl twenty-six years of age who complained of indigestion and pain in the right knee, caused by a bruise. Food and a simple bitter tonic with iron were given, with camphor liniment for the knee, with directions to rub it well into the part morning and evening. Under this treatment she made a rapid recovery. Case 22, a peasant widow fifty years of age, who had borne ten children, five of whom had died in infancy from "gastric disturbances," was thought to have fractured several of her ribs by falling from a load of hay ten days before. It was found, however, that the side had only been severely bruised, and a characteristic friction-sound showed that the pleura had been injured as well, but there was no effusion of liquid. The injured side was carefully strapped with adhesive plaster and the patient was advised to rest in bed for a few days. She soon recovered. Case 23 was an ill-nourished spare peasant woman sixty-four years of age, below medium size, who had borne twelve children, seven of whom she had lost in infancy and childhood from "gastric disturbances." Her chief complaint was that she had attacks of paroxysmal vertigo, occurring irregularly several times daily, always when standing or walking. There was no impairment of hearing, the bowels were perfectly regular, the urine was normal, there was no evidence of liver derangement, and never any headache. She thought that the attacks of vertigo were caused by indigestion, and was positive that when she ate *polenta*—which always caused flatulent distension and distress—the vertigo was much worse and the attacks lasted longer. She was not hysterical. I had an opportunity to observe an attack which occurred as she was standing at my table, and I have no doubt that she would have fallen but for my assistance. There was no loss of consciousness, the face was rather pale, the pulse not accelerated, the heart's action was perfectly regular but perhaps at the time slightly weaker, the pupils were not affected, and there was not the slightest convulsive movement. This attack lasted about seven minutes, and after resting in a reclining position for twenty minutes or more the patient was able to walk without trouble, though she still complained of dizziness and slight nausea. As she was a very honest, intelligent woman I have no doubt that her account was perfectly correct. As she expressed it, "Sometimes my head goes round and round, and sometimes things seem to go round me." Very strict and careful directions as regarded diet and hygiene were given, and as the good woman was somewhat anæmic tincture of iron chloride, nux vomica, and gentian were prescribed. Under this treatment she recovered, and at the date of her last visit (Sept. 18) she had not had an attack of vertigo for more than three weeks.

Case 24 merits more detailed description. The patient was a spare, muscular peasant proprietor forty-five years of age. He had an unexceptionable family history; he was well-to-do, his people having also been in "comfortable circumstances" for several generations. He had always enjoyed good health until two years before, when he suffered from a severe attack of influenza, with high fever, gastro-intestinal derangement, and nervous symptoms, lasting for more than three weeks. During the first ten days of this illness he took ten grains of antipyrine every two hours "quite regularly," and occasionally five grains of calomel. His reason for giving up these was, "The antipyrine made me so cold that I thought I was dying, and the calomel only made my diarrhœa worse." After this he would take no more medicine. During the whole period of the illness his diet had been thin soup, barley coffee with milk, and occasionally a little *polenta*, which, however, always caused great distress. Upon the fifth day he left bed and tried to work, but such were the weakness and debility that he could accomplish nothing. Since then he had never been well or able to work much. "Several months" after this attack of influenza his friends had noticed that sometimes while talking he would lose consciousness for a few moments and then recover himself with a start. He was never convulsed at these times, but his face grew pale and the eyes were fixed. He had no recollection of these attacks or of the interrupted conversation, but always felt somewhat dazed afterwards and sometimes wished to lie down. They had also remarked that he was gradually growing more listless and apathetic and his face heavy and expressionless, whereas normally he had been an eager, energetic man, full of spirit and amination. At first the seizures occurred at intervals of two or three weeks, but latterly he had been having one or more each week, and sometimes two attacks upon the same day. On July 23rd, at about 4 P.M., he emitted a peculiar cry and fell unconscious, after which a violent convulsion, chiefly at the left side, succeeded, with foaming at the mouth and clenching of the teeth—in short, a typical epileptic seizure. The only circumstance that the patient had ever noticed was a sensation of coldness in the left palm, which passed like a wave up the arm. His wife remarked that whenever he complained of this feeling extending to the shoulder an attack was sure to follow. While taking down the history I noticed that the patient's eyes were injected, his complexion muddy and sallow, and his lips, fingers, and ears rather pale. He was half reclining in the chair, the legs loosely extended and the arms hanging, his face being notably dull, wooden, and expressionless. Whenever addressed there seemed to be a distinct interval before the message was delivered and the answer returned, although he then seemed to be fairly clear and intelligent, soon relapsing, however, into apathy. Physical examination discovered no organic lesions; the reflexes were normal except the knee-jerk, which was rather feeble. The ophthalmoscope showed a certain injection of both optic discs, and it should be mentioned that the patient had a severe headache at the time, from which he often suffered. The pupils were perfectly regular and there was no complaint of indigestion. He was markedly anæmic. He was directed to take a cup of coffee-and-milk for breakfast, soft-boiled eggs, and toast-and-butter; for dinner, at noon, fowl or meat, farinaceous food, green vegetables and salad; and a light supper, at six o'clock, of milk, toast and eggs. Good red wine of the country was allowed at dinner. The medical treatment of the above case presented unusual difficulties. It was thought best not to administer the bromides at this time, because the symptoms (including an eruption of acne vulgaris) seemed to be suspiciously like bromism, although both the man and his wife assured me that he had taken no medicine since the attack of influenza. I afterwards found that my mountaineers were an honest, upright race, and always told me the truth. Zinc phosphide, iron, strychnine, and belladonna were prescribed in full doses three times

a day, and the wife was instructed to sponge the patient's spine alternately with hot and cold water daily at bedtime. Upon this treatment he improved remarkably in almost every respect (apparently) until Aug. 15th, having had no epileptic attacks in the meantime. His sole complaint was that he had rather frequent attacks of migraine, for which phenacetine (five grains) and nitro-glycerine ($\frac{1}{100}$ gr.) were then prescribed every two hours until they were relieved with great success. On Aug. 25th he had a very severe epileptic convulsion at 4 P.M., lasting for more than twenty minutes, which left him so weak and exhausted that he remained in bed for two days. He came to the clinique on Aug. 29th, and it must be confessed that his general condition was then rather worse than when I first saw him. Bromide of potash (thirty grains) and tincture of belladonna (fifteen minims) were now prescribed, at 10 A.M. and 2 P.M., freely diluted with water. With the exception of several slight attacks of *petit mal* he had no more epileptic seizures until I saw him for the last time on Sept. 18th, when his general condition had much improved. Although I have since had better accounts, and have from time to time sent further instructions as regards treatment, I shall watch the future progress of this case with great anxiety.

A CASE OF TETANUS NEONATORUM.

By R. D. RUDOLF, M.B., C.M. EDIN.,

LATE SENIOR PRESIDENT, ROYAL MEDICAL SOCIETY, EDINBURGH; LATE RESIDENT PHYSICIAN, ROYAL INFIRMARY AND SICK CHILDREN'S HOSPITAL, EDINBURGH.

ON Dec. 7th, 1893, I was called to see a male child aged seven days who was said to be suffering from "lockjaw." The family history was good. Both parents are healthy Europeans, living healthy country lives. The mother had had several miscarriages, however, since her marriage two years ago. These were due to a retroversion and flexion of the uterus, and on these being partially rectified by a Hodge's pessary she had gone to a week beyond her time with the patient, her first child. The labour was normal, and instruments were not used. The umbilical cord came away on the third day, as is common in the tropics, and the scar had been normal all along. The patient, who was at the breast, had seemed to be perfectly healthy until the afternoon of Dec. 6th, when he appeared to be a little restless. At 7 P.M. he did not seem to care for the breast, and an hour later refused it altogether. Then the nurse first noticed that the jaw was rigid. In a few minutes a slight spasm of the face and body came on, lasted for a minute or so, and then died away, but the jaw remained fixed. These spasms recurred at irregular intervals during the night. Between them the child could drink fairly well out of a spoon, and was thus given mother's milk. I saw him at 7 A.M. on Dec. 7th, and found him to be a well-nourished child. The scar of the umbilicus had healed and was perfectly normal. The head was somewhat large and unusually ossified. The anterior fontanelle could just be felt as a depression, and not as a distinct space, between the bones. The edges of the bones around were thickened and raised. The right parietal bone seemed to overlap the left, and both bones distinctly overlapped the occipital. On placing the finger in the patient's mouth the jaw was felt to be rigid, and on attempting to force it open it became more so, the tongue was slightly protruded and very blue, the lips puckered up and were protruded as in pronouncing the letter "o," and the forehead and face became wrinkled. The eyes were firmly closed, the back was stiffened, the arms were flexed, and the hands were clenched, with the thumbs outside the fingers. The lower limbs were less affected, but the toes and feet were dorsi-flexed and the legs were slightly rigidly extended. This spasm, which was produced apparently by the placing of the finger in the mouth, was accompanied by a low, painful wail and free perspiration. It lasted for about a minute, and then gradually died away; but the jaw remained fixed and the back never became quite flaccid. The bowels and digestion appeared to be normal, and the child had micturated several times during the night. No irritation was present about the penis. The pulse (right) after a spasm was about 150, but difficult to count and irregular. I gave one grain of chloral hydrate in a little sugar-and-water, and the swallowing of this brought on another spasm.

8.30 A.M.—The child has slept a little. The pulse is 132, regular. The jaw is still firm. One grain of chloral hydrate was given. The milk was continued.

9.30 A.M.—There are no spasms. The pulse is 114. One grain of chloral hydrate and milk were given.

10 30 A.M.—The patient sleeps well. The mother says that he is better now than since midnight. The bowels have been moved. The pulse is from 120 to 132, a little irregular. The respiration is very fast, from 45 to 50, as it has been all along.

11.30 A.M.—There are no spasms. He is sleeping quietly. One grain of chloral hydrate was given.

12.30 P.M.—There were several spasms during the last few minutes. The pulse is from 132 to 144.

1.30 P.M.—The pulse is 144, and the respiration 36. The jaw is less fixed.

2 30 P.M.—One grain of chloral hydrate was given. Swallowing brought on spasm.

4.30 P.M.—The patient slept well until now; then placing the finger in the mouth brought on a severe spasm, which lasted for a couple of minutes, and was accompanied by a good deal of laryngeal stridor. The hands were firmly clenched and the thumbs this time were in. He perspired profusely. The pulse after the spasm was 170 and irregular; the bowels were loose and scanty.

4.45 P.M.—There were five spasms during the last ten minutes. I gave a bath at 98° F. for eight minutes. In the bath the child was continually twitching as in an ordinary fit. He treaded the water and his arms were crossed over the breast. The eyelids were very firmly closed. On being taken out of the bath he became quieter and fell asleep. An enema was given containing three grains of bromide of potassium and twenty drops of brandy.

5.40 P.M.—Since the enema the patient has been less rigid and the jaw has not been so fixed. He has taken several spoonfuls of mother's milk; the pulse is 140.

6 30 P.M.—There were several spasms, so I began with a little chloroform, which gave great relief.

8.30 P.M.—The temperature is 102·8° F. in the rectum.

9.30 P.M.—There were several rather bad spasms, which were greatly relieved by chloroform. One grain of chloral hydrate was continued every two hours.

11.30 P.M.—An enema of three grains of bromide of potassium and twenty-five drops of brandy was given, but not retained.

Dec. 8th, 2 A.M.—The temperature is 101°. The jaw is rigid.

4 A.M.—He has had many bad spasms, and these now affect the larynx a good deal. Chloroform gives much relief.

6 A.M.—I gave a bath at 99° for eight minutes. He opened the eyes on being placed into it. The pupils seem to be contracted somewhat and react to light about normally. Slight double external strabismus is present. On a spasm coming on in the bath the movements were much like those of swimming. The hands were clenched, but the thumbs were not grasped.

8.30 A.M.—After a bath he had twenty minutes of complete calm, except for continuous rigidity of the jaw and slight rigidity of the back. The spasms have commenced again. The respiration is irregular; a long one is followed by two or more hurried short ones, and then a long one again. The eyes are open. The pupils are small and react slightly to light. External strabismus is still present. Chloroform seems to be losing its effect on the spasms, but relieves those of the larynx considerably. Hiccough has set in, and at each attack the head nods violently and the legs are flexed forcibly on the abdomen.

10.30 A.M.—The hiccough has ceased. An enema of three grains of bromide of potassium and twenty drops of brandy diluted was given, but not retained. The patient continues regularly to take mother's milk out of a spoon, and swallows with ease. The chloral hydrate, however, always causes a spasm.

12·30 P.M.—I gave the chloral hydrate *warm*, and no spasm resulted. The temperature is 102·8°.

2 P.M.—The patient suddenly made three or four sighing respirations and died.

Remarks.—This seems to be a typical case of tetanus neonatorum—a disease so common in the tropics. The notes were all taken personally at the bedside, and hence may be of some value. As to the causation, this seems to be quite obscure, unless it be thought to lie in the condition of the cranium. Nothing was present to account for it traumatically. Of course the child may have acquired a chill, but the trained

nurse stated that she knew of no possibility of this having occurred. As noted at the time, the bones of the head were not normal, and since then I have read in Owen's "Surgical Diseases of Children" that Marion Sims and Hartigan "ascribe this disease to extravasations at the base of the brain and medulla, the result of inward displacement of the occipital bone, there being in most cases a definite overlapping of the lateral margins of that bone by the posterior border of one or both parietals." This was present in the case under discussion, and also the right parietal bone appeared to overlap the left, and all were unusually ossified and thickened. The brain could not expand as in the pliant skull of a normal child. The course of the disease was fairly typical, except that at times the spasms became more of an eclampsic nature, being clonic. As regards the treatment, at first this appeared partly to relieve the symptoms, but soon a relapse occurred and the course was steadily downwards. It is interesting to note that the medicine when given cold produced a spasm, but that when given warm it was swallowed, like all the milk, fairly easily and without any production of spasm. Unfortunately, no post-mortem examination could be obtained.

Sewan, Sarun, Bengal.

SCURVY RICKETS.[1]

BY T. C. RAILTON, M.D., M.R.C.P. LOND.,
PHYSICIAN TO THE MANCHESTER CLINICAL HOSPITAL FOR WOMEN AND CHILDREN.

BEFORE bringing forward the notes of three cases of scurvy rickets which I have lately had the opportunity of seeing, I would make an observation with regard to the association of the two diseases. I imagine that no medical man considers scurvy rickets to have a distinct entity; it is merely a fortuitous combination of two diseases, either of which can, of course, exist separately. The only point upon which I wish to remark is the peculiarity of infantile scurvy being more frequently found in rickety children than in children who are not rickety. The explanation appears to be a simple one. The great number of artificial foods now sold, upon which infants who should be fed at the breast are brought up almost from birth, are invariably deficient in the antiscorbutic element which is essential, and it appears to be exceedingly probable that cow's milk, particularly that obtainable in large towns, contains but a small proportion of that element, so that it is not surprising to find that the rickets in which improper feeding plays so important a part etiologically is accompanied in certain cases by scurvy. On the contrary, the wonder is that so few children suffering from rickets also show symptoms of scurvy.

CASE 1.—An infant twelve months old was first seen in consultation in April, 1892. The history given was that he had never been fed at the breast, but had been brought up at first on milk-and-water from a bottle and latterly, on account of diarrhœa, had been fed entirely upon a prepared food. He had recently cut two teeth, had not attempted to walk, and had always perspired profusely about the head during sleep. For the fortnight previous to my seeing him he had seemed to be very unwell, moaning during his sleep and crying when disturbed. During this time it was observed that he kept his limbs very still and that they were becoming swollen. He was an exceedingly pale and flabby, though not emaciated, child, with distinct indications of rickets, such as beading of the ribs, enlarged radii, and widely open anterior fontanelle. The left thigh and leg—the parts chiefly affected—were throughout their whole length uniformly, though not very greatly, swollen, the swelling being firm and tense, and the skin pale. The surface appeared to be hot to the touch, especially in the lower part of the leg. The right thigh was apparently normal, but the right leg presented a swelling similar to that of the left leg, though in a less severe form, extending upwards from the ankle for about one-third of the length of the leg. In the upper extremities the forearms were also similarly affected, but not to the same extent, a somewhat cylindrical swelling extending from the wrists upwards for a short distance. The upper arms were not swollen. The child cried so bitterly during the examination that it was impossible to make it a very thorough one. It was ascertained that there were no hæmorrhages, either in the skin or from any mucous membrane. The urine was not examined. The gums were not spongy or ulcerated. For treatment lead lotion was applied to each of the limbs, and the juice of one orange was given daily, together with cod liver oil for the rickets. Three days later the child seemed to be much better; the swelling and tenderness of the limbs had diminished considerably, the left leg and thigh still remaining the most swollen. Ten days later still some thickening in the lower third of the left femur and a little in the lower third of the right tibia were to be made out, but the uniform swelling of the limbs had entirely disappeared. It was evident that the thickening which remained was immediately around the bones mentioned. The child had recommenced to throw his limbs about in a natural manner and appeared to have no pain whatever. From that date he steadily recovered and is, I believe, now quite well.

CASE 2.—An infant ten months old was brought to the Clinical Hospital for Women and Children in April, 1892. She had been put to the breast for one month and subsequently fed on prepared food with equal parts of milk and water. She had snuffled at the nose when about a month old, but no rash had been seen. The mother had been confined once before, when she was delivered of dead twins. The child for about three months had not thrown out her arms and legs as previously, and during this period her legs above the ankles were observed to be swollen at times, though the swelling would go down again in a few days. Latterly, however, it had persisted. Five weeks before I saw her an extravasation of blood appeared in the right upper eyelid, which was quickly followed by one in the lower lid; a few spots, probably purpuric, were seen about her arms, and her nose began to bleed almost daily, sometimes two or three times in the day.

A fortnight before she was brought to the hospital the forearms began to swell above the wrists, and an ecchymosis appeared in the left lower eyelid. Three days before she came the upper lid became ecchymosed. The infant was obviously rickety; she had no teeth, had beads on the ribs, and perspired freely in the head. There was nothing to support the suspicion of congenital syphilis. She had ecchymoses in the eyelids of both eyes, the upper lid of the left eye being reddened and puffed out by a large effusion, and the lower lid and both lids of the right eye were black in patches. The child was very still, but cried the moment she was touched for the purpose of examination. The legs were uniformly swollen above the ankles, the swelling being firm and evidently very tender. There was no heat; the skin was pale and did not pit upon pressure. The forearms just above the wrists were similarly affected, that of the right side being more swollen than the left. Nothing abnormal was observed about the thighs or upper arms. There were no purpuric spots to be found, and the gums were healthy. The urine was not examined. She was ordered the same treatment as in the first case. When seen a week later her nose had bled once only; she looked much better and bore an examination of her limbs fairly well. The swelling had subsided considerably. The ecchymoses in the eyelids had disappeared, with the exception of one black patch in the right upper lid and a smaller one in the left lower lid. A fortnight later still she was much improved. There was some thickening to be felt about the left tibia, above the malleoli, and in the radius of the right forearm, just above the wrist, but all other symptoms had subsided. The nose had bled twice since the previous visit. I saw her again in July, when she looked very well. She had cut four teeth. All the thickening about the bones had disappeared. In October I made another note to the effect that the rickets were very much better and that she had shown no further symptoms of scurvy.

CASE 3.—An infant ten months old was admitted into the Clinical Hospital for Women and Children in November, 1893. He had been fed on prepared food and corn-flour from birth, as the mother was compelled to go out to work. There was no history of syphilis, and the child had not snuffled. He was a strong, healthy infant at first, but pined away, and when six months old he suffered from diarrhœa, which reduced him greatly. Three weeks before he was brought to the hospital the left leg was observed to be swollen and subsequently became blue, as though bruised, and a week afterwards the right eye protruded and the eyelids became dark red. When admitted he

[1] A paper read before the Pathological Society of Manchester, Feb. 14th, 1894.

was seen to be a small and weakly child, with a sallow complexion and feeble muscular development. He weighed 14¼ lb., the usual weight of a child of his age being 23 lb. The two lower central incisors were just erupting. The gums were not spongy or ulcerated. The ribs were beaded, and the abdomen was tumid, but otherwise normal. There were signs of bronchitis, especially about the base of the right lung, and the temperature was 99·6° F. The left leg was much swollen from the knee down to the ankle and was tense and brawny to the touch. The skin in the front was greatly discoloured by blood extravasation. Pressure evidently caused acute pain. None of the other limbs appeared to be affected. There was proptosis of the right eye, with extensive ecchymosis into the upper eyelid. The urine, on being examined, was found to contain a little blood. The child was put on orange juice, milk, and beef-tea, and lead solution was applied to the affected limb. At the end of a week the eyeball had ceased to be prominent; the swelling of the upper eyelid had disappeared, leaving only a slight tinge of yellow. The left leg was less tense, and the discolouration of the skin was almost gone. No fresh extravasations or swellings had occurred. No blood was found in the urine. The temperature had varied between 98° and 100°. Unfortunately at this stage the bronchitis present when the child was admitted grew worse, symptoms of broncho-pneumonia developed, and on the ninth day after admission the temperature rose to 103°. The back of the right lung became almost absolutely dull to percussion, and death took place on the twelfth day, the temperature just before death rising to 109·4°. A partial necropsy was made, and the tibia and fibula of the left leg were removed. The periosteum of the tibia upon being incised was found to be greatly thickened and vascular. It stripped easily from the bone, being separated from the shaft by a blood-clot about one-eighth of an inch thick in its thickest part, which wrapped the latter for some part of its circumference, extending upwards and downwards for nearly its whole length, its thickest part being in the upper third. The surface of the shaft was quite smooth. At the upper end it appeared to be partially separated from its epiphysis. The lower end was not separated. The muscles were for the most part dark-coloured from effusion of blood into them but there were no clots. The periosteum of the fibula appeared to cling to the bone normally and was not thickened, but upon incising it and stripping it off a very small patch of effusion appeared at its upper end upon the outer side. There was no separation of the epiphyses. There were no swellings to be felt about any other bones, and the examination was not carried further.

Remarks.—These three cases show varying degrees of severity, though not the stage at which the disease in itself would prove fatal. In the first case the extremities were swollen, but without further symptoms of hæmorrhage. In the second case the extremities were swollen, and there was extravasation of blood into the eyelids, together with a few purpuric spots in the skin and bleeding from the nose. In the third case there was swelling of the left leg with extravasation of blood into the skin. There was also extravasation of blood into the eyelid and into the areolar tissue of the orbit, causing proptosis, and finally there was hæmaturia. In none of the cases was crepitus obtained in the bones, nor were the gums spongy or ulcerated. In Dr. Barlow's table[2] the gums were affected in fifteen out of thirty-one cases. In each case the child had been deprived of breast milk (with the exception of one who had it for a month only) and had been brought up on improper food, of which cow's milk does not appear to have formed a large part.

St. Ann-street, Manchester.

BRONCHO-PNEUMONIA AND CLIMATE: A LOCAL STUDY.

BY J. L. KERR, M.D. ABERD.,
LATE EXAMINER IN CHEMISTRY AND IN MEDICAL JURISPRUDENCE, UNIVERSITY OF ABERDEEN.

OF all the diseases to which flesh is heir in the Rossendale Division of Lancashire the most numerous are those of the pulmonary organs. Rarely does an infant or young child escape an attack of broncho-pneumonia. Many elderly persons die from bronchitis, and acute pneumonia claims its victims every year, and, indeed, is so well known by the inhabitants of the district to be almost uniformly fatal that it strikes terror into the minds of the relatives and friends of the sufferer. Having during the last eleven years treated a very large number of cases of broncho-pneumonia in children—so large a number that, if I stated them in figures, I should be accused of exaggeration—I have gained a knowledge of the symptoms, progress, and treatment of the disease which will justify me in writing about it. It is most prevalent during the months of October to April inclusive. The valley in which I dwell, varying from 400 to 900 feet above the sea level, runs (roughly speaking) from north-west to south-east. It is narrow, with the higher hills on the westerly side about forty miles distant from the sea, and the bend of the trees and meteorological observations—of which I have a complete series—show that the prevailing winds are from the south-west; there is consequently a high rainfall, often fifty-two inches, annually. The soil is thin, derived from the sandstone rock and years of decayed grass, with a thick and very stiff subsoil of clay. During the period from October to April the hygrometric readings of the wet and dry bulb thermometers are nearly uniformly equal, the wet bulb very rarely reading more than three degrees lower than the dry bulb, and often only one or two degrees lower. This indicates a moisture-laden atmosphere, nearly to saturation and prevailing for a long period, and although the temperature is rarely very low, even in the depth of winter, the air feels chill and damp during these months.

I have entered into these particulars more fully because I am convinced that this state of chilly moisture, due to the land being cold and wet in consequence of the stiff clay retaining the surface water in the soil, is the predisposing cause of the great prevalence of bronchial and pulmonary complaints in this district. The moist air, combined with the comparatively high mean temperature which we have here, favours the growth and perpetuation of the cause of the disease, whatever it may be. It attacks children of all ages, from a few weeks old up to about six years of age. It is nearly always epidemic. The duration of the attack is nearly always eight days. There is a marked tendency towards recovery in children who are carefully treated and who are not debilitated by improper feeding or other cause.

I shall perhaps be pardoned if I enter more particularly into the symptoms. The child has premonitory symptoms for about two or three days before the onset of the attack; these symptoms may be defined vaguely as malaise. The child is hot and cross, with slight cough and not much appetite. There then follows high fever, with a rigor in older children and with a convulsion in some of the younger children. One lung only is affected at first, there being fine crepitations heard during inspiration, but in nearly all the children the other lung quickly becomes involved; there are then heard mucous râles over the whole chest, with quick breathing, hard, painful cough, flushed face, and anxious countenance, the skin being dry and hot for one or two days, but afterwards moist and even wet with perspiration. In cases which end favourably, on the seventh day the pulse-rate diminishes, the temperature falls, the child sinks into a sleep of several hours' duration, and on the eighth day the severity of the symptoms is so greatly ameliorated that recovery quickly follows.

After much experimental treatment I have found the best to be the administration, during the whole of the feverish stage, of a combination of salicylate of soda in doses of from two grains and a half to five grains, according to the age of the child, with ipecacuanha wine in emetic doses, every two hours. The salicylate of soda reduces the fever and, I believe, cures the disease; the emetic doses of ipecacuanha wine are necessary to clear the lungs of mucus and thus prevent death from suffocation. After the crisis on the eighth day there is frequently a necessity for a change of treatment in those cases where there is much phlegm, and to these patients I give dilute sulphuric acid with ipecacuanha wine, and I have rarely had cause to be disappointed with it. The room should be airy, with frequent changes of air, but without draughts. It need not be hot; some of my patients have recovered best in cool rooms, where fresh air was most plentiful. One patient in particular struck me as remarkable in this sense. The mother said she could not bear to be "closed up," and in a cottage of one room the child lay, not exposed to draughts, but to the full and free air of an open outer door during the whole of her illness. I remonstrated at first as it was a very severe case, but seeing that the child was recovering better than some did in hot, closed-up rooms, I ceased to do so and learned a lesson which I have found to be very useful, with some of the more

[2] Transactions of the Royal Medical and Chirurgical Society, vol. lxvi., 1883.

heroic element softened down. The steam tent is to be condemned in the strongest possible terms. The food should be simple—viz., milk and gruels, with water to drink. In many cases stimulants in small quantities are absolutely necessary, and mostly so about the fifth day in cases where the cough is very feeble and, consequently, the mucus collected in large quantity. Such patients should have heroic doses of ipecacuanha wine given to them at frequent intervals. I always use poultices of linseed meal—i.e., jacket poultices—not that they do any good, but the patients' friends think they are necessary, and as they do no harm it is as well to let them be applied.

It will be seen from the tenour of my remarks that I consider broncho-pneumonia in children to be only a modified form of acute croupous pneumonia in adults. Instead of exudation in the air vesicles of the lungs, as in adults, there is a large and abundant secretion of mucus. The phenomena of a premonitory stage, in both children and adults, that of adults being frequently seven days; the duration of the disease being the same in children as in adults; and the crisis being as well marked in children as in adults - all these seem to me to point to this conclusion. The coincidence of broncho-pneumonia in children and of acute croupous pneumonia in adults in this neighbourhood also points to the same conclusion.

Crawshawbooth, Manchester.

ACUTE NEPHRITIS FROM SEWER AIR POISONING.[1]

BY C. T. VACHELL, M.D. LOND.,
PHYSICIAN TO THE CARDIFF INFIRMARY;
AND
D. R. PATERSON, M.D. EDIN., M.R.C.P. LOND.,
PATHOLOGIST TO THE CARDIFF INFIRMARY.

ATTENTION has been called by Sir George Johnson to the occurrence of albuminuria resulting from sewer air poisoning, and the cases recorded in his two papers[2] are very suggestive of the relation he seeks to establish. Considering the vast importance of this subject, it is not a little surprising that the data available should be so small, for with the exception of the papers already mentioned very little has been brought forward to assist its elucidation. This is no doubt due in a great measure to our ignorance of the nature of sewer air poisoning and to the inherent difficulties presented by the evidence at our disposal in its investigation. It goes without saying that much care in the sifting of facts is required and that every precaution should be exercised in deciding an issue like this; for in the case of an affection like acute Bright's disease the usually accepted cause—cold and chill—is ever at hand and is perhaps only too readily accepted without further thought. That it may have other and more subtle causes is undeniable, and it is with the purpose of calling attention to one of these that we bring forward the following cases. In Sir George Johnson's patients the cause of albuminuria was sought for and found in the state of the house drains. So far as we know, no one has attempted to show that it may be related to or identical with emanations from street sewer ventilators. If this is so its importance can scarcely be overrated, for it would be more widely reaching in its effects upon the public health and would be capable of producing serious consequences over an extended area. It may be of advantage, further, to discuss this matter at the present time, when the influence of open sewer ventilators is receiving some amount of public attention.

CASE 1.—A man twenty-three years of age was taken ill at the beginning of August of this year with shortness of breath and weakness. His club medical attendant states that in a few days he developed a well-marked purpuric rash on the legs. On his admission to the Union Hospital, under the care of Dr. Sheen, on Aug. 12th, he had œdema of the legs and was suffering from severe diarrhœa, blood passing in the stools and urine. On the 15th the temperature was 100° F. (previously to this it had been practically normal). Diarrhœa was checked by an astringent mixture, but the patient was now affected with general tonic spasm, which was relieved, however, on the bowels becoming loose. This alternation was noted several times. On the 18th the temperature was 101° and the patient had pain and swelling in several joints, lasting some days. By the 23rd the diarrhœa had ceased and the temperature was normal. On the 30th the urine was still loaded with albumen and contained blood cells, and fourteen days later general œdema developed, with an increased amount of blood in the urine. He left the hospital on Oct. 1st and was admitted into the Cardiff Infirmary on Oct. 12th, when he showed considerable dyspnœa, with œdema of the face and body generally; the urine averaged about 50 oz. in twenty-four hours, with a sp. gr. of 1012, and contained much albumen, about 4 grammes per litre (Esbach), blood cells, and granular and hyaline casts. On Oct. 30th the patient was much worse, the œdema had increased, the amount of albumen in the urine was more, and there were signs of effusion into both pleuræ. On Nov. 4th the distress was more marked, and pericarditis had set in and the patient died two days later. A post-mortem examination was not permitted. The symptoms and course of this case point clearly, we think, to profound blood contamination. The early appearance of purpura, followed later by symptoms closely resembling those of dysentery, even to the sequelæ of joint affections sometimes met with in that disease, indicates dependence upon some poison, organised or chemical, which had obtained entrance into the blood and exerted its toxic power on the internal organs, and with lasting effect on the kidneys.

CASE 2.—A young woman nineteen years of age was admitted into the Cardiff Infirmary on Oct. 6th, 1893. The history obtained was that three weeks before the eyes became puffy and the legs swollen, and that she suffered from pain in the back. One week earlier she had sore-throat but no rash, and now there was no trace of peeling. On admission she was pale, with puffy face and slight swelling of the legs. The pulse was 88. The urine varied in amount from 20 oz. to 70 oz. in twenty-four hours, it had a sp. gr. of 1012, it contained albumen, about 4½ grammes per litre (Esbach), and granular casts, but no blood. On Oct. 13th the albumen had fallen to 1½ grammes per litre. On Nov. 13th the albumen was ¾ gramme per litre (Esbach), on Dec. 5th it was somewhat less than that, and by the 16th it had quite vanished.

CASE 3.—A sister of the preceding patient, twenty-seven years of age, was admitted to the Cardiff Infirmary on Oct. 18th. She had been ill for about ten days, having first noticed swelling of the eyelids and then of the legs. She stated that there had never been any appearance of blood in the urine; the neck had been swollen, but there was no sore-throat. On admission, the patient was anæmic, with puffiness of the face and the left side of the neck, and the legs pitted on pressure. The quantity of urine averaged 35 oz. in twenty-four hours, with a sp. gr. of 1015 and much albumen, about 7 grammes per litre (Esbach). In the heart and lungs there was nothing noteworthy. Four days after admission the patient had sore-throat; this showed general redness, but no patches were to be noticed. On Oct. 21st the albumen stood at 6 grammes per litre and the urine contained blood cells and epithelial and granular casts. By Nov. 8th the albumen was reduced to 3 grammes per litre and only a trace of blood remained. On the 16th it still stood at 3 grammes per litre, and three weeks later it was about 2½ grammes per litre. The urine contains now (Feb. 27th) only a minute trace of albumen. The patient is still in hospital. The daily quantity of urine varied between 30 oz. and 50 oz.

The last two patients, as stated above, are sisters and live in the house of a married sister with whom the patient in Case 1 lodged. All three cases, therefore, originated in one house. The patients were generally out at work during the day, whilst the two girls slept in one bed at night. The man's habits were not quite regular, as he admitted being occasionally drunk. Both the women, however, are total abstainers. Special inquiry was made into the previous health of all three patients and nothing noteworthy was disclosed. In reference to the onset of the illness, the patients in Cases 1 and 3 denied having sore-throat, though in the latter a slight attack was observed some days after admission to the infirmary. Before detailing further the circumstances under which these cases occurred, perhaps it would be well to give the notes of a fourth case, which occurred in a house in the same street, three doors from the other.

CASE 4.—A man thirty-five years of age was admitted to the Cardiff Infirmary on Oct. 17th, 1893. He had always enjoyed good health until about Oct. 11th, when he noticed that his face was puffy; the abdomen soon became swollen and then the legs. On admission the face was puffy and the

[1] A paper read before the Cardiff Medical Society in December, 1893.
[2] Brit. Med. Jour., vols. i. and ii., 1888.

legs pitted on pressure. The pulse was 60, the urine contained albumen 1¾ grammes per litre (Esbach), but neither blood nor casts; its sp. gr. was 1020. On the 19th 40 oz. of urine were passed and on the 20th 72 oz.; on the 24th the albumen was 1 gramme per litre (Esbach) and a week later it had fallen to 0 5 gramme per litre. On Nov. 7th there was a slight cloud and on the 27th it had quite disappeared.

Coming now to the external conditions, careful examination was made of the premises occupied by the patients in Cases 1, 2, and 3, but nothing amiss could be discovered that would throw light on so serious an outbreak. The house was scrupulously clean, the water-closet, placed outside at the back, was in good order and efficiently trapped, and the water-supply was excellent. There was no evidence of scarlet fever or diphtheria. Dr. Walford has kindly supplied us with the information that no case of infectious disease had been certified in the immediate neighbourhood for some time, and we satisfied ourselves by a house-to-house inquiry that no disease of such nature had been prevalent; absence of any apparent cause within the house occupied by the patient in Case 4 was likewise noted. Our attention was early arrested by the smell of sewer air and directed to an open grid ventilator which is situated in the street directly opposite the house occupied by the patients in Cases 1, 2, and 3, about three paces from the door. This, it appears, has been the subject of marked complaint on the part of the occupants of this house, whom it affects more particularly owing to its proximity. Immediately opposite, a short street abuts at right angles, and through this the prevailing wind blows, carrying the offensive smell into the house. That this is so was quite obvious at the time of our examination, an unpleasant sickly odour of sewer air being perceptible even in the passage of the house. We were informed, however, by the residents that the smell was scarcely noticeable compared with that given off during the summer and autumn, when it was almost overpowering. From the house occupied by the patient in Case 4 also, it was said, the smell could be perceived occasionally, but it was at no time so obtrusive as higher up the street. It is worthy of note that three other houses at which inquiry was made have been occupied by the same tenants for several years, the patients in Cases 1, 2, and 3 had been in the house for six months, and in Case 4 for eight months. We found, as already stated, no trace of infectious disease. Most of the inhabitants are adults, though in both of the houses which furnished the cases of nephritis there were several children. They do not appear to have suffered in any way. We may state, however, the fact, which may or may not have some significance, that the married sister of the patients in Cases 2 and 3 was confined at the end of September in the house in question, and we learn from her medical attendant that she suffered from pyrexia without apparent local trouble during the second week of the puerperium. Particulars obtained of the health history of the former tenants of this house go to show that they had lived in it for more than twenty years, and we have it on the authority of his club medical attendant that for at least ten years the late occupier has suffered from albuminuria and has had two attacks of acute dropsy, the second about a year ago. About four years ago a married daughter went to the house to go through her first confinement and died a fortnight after delivery. The medical man who attended her states that death was from acute pulmonary inflammation, which he considered had some relation to the puerperal state.

In reviewing the evidence which an exhaustive inquiry has brought together there is reason to think that it throws some light upon the origin of these cases. The absence of scarlet fever, we take it, is pretty conclusive. Investigation specially directed to this point gave a negative result. Moreover, the patients were examined at a sufficiently early stage in the illness and also subsequently to determine the presence of desquamation, if it did exist. There was no reason to suppose diphtheria to be at the root of the trouble; in neither male patient was there a trace of sore-throat at any time, and the early appearance of dropsy in all the cases puts the idea of diphtherial poison out of the question. We satisfied ourselves that the mischief did not arise from food poisoning, and no signs of lead intoxication could be found. In short, we are unable to explain this outbreak—which can scarcely be dismissed as a mere coincidence—by causes well recognised, and would suggest that it stands in some relation to the emanations from the sewer ventilator. Our knowledge of sewer air poisoning is too incomplete to permit definite conclusions being drawn, and it is best to avoid the danger of absolute statement in this connexion. Still the prominence, here, of this possible cause directs attention forcibly to it, and we bring forward this explanation as having much probability and as being deserving of serious consideration. The position of the ventilator within a few feet of the door and situated so as to pour its effluvia directly into the house renders it as effective (if not more so) a source of sewer air as a leaky drain-pipe inside. The sanitary authorities are able to flush this sewer by means of the canal, and when this is done the offensive odour disappears and does not return for some days, and during wet seasons it may not be perceptible at all. Throughout last summer and autumn the smell was much complained of, as might be expected from the prolonged drought and consequent inefficient flushing of the sewer. A reference to meteorological tables shows that the cases occurred towards the close of two periods of dry weather, when there had been a dearth of rain for many weeks and the water in the canal had fallen very low; indeed, such extreme conditions had not obtained for many years. The incidence of the disease on new tenants is a fact coinciding with what is known of sewer air poisoning, from which old residents may apparently acquire an immunity. The occurrence of two acute attacks in the man who suffered from chronic Bright's disease and his speedy recovery therefrom would favour the suggestion that damaged kidneys prevented the acquisition of complete protection. The facts concerning the two lying-in women afford no evidence of puerperal septicæmia. Though one suffered from pyrexia and the other died from pneumonia within the puerperal period both illnesses may have been forms of sewer air poisoning. Here again it would be almost impossible to obtain conclusive evidence, and we have to be content with the impression, well recognised though somewhat vague, that not infrequently sewer air poisoning does manifest itself in elevation of temperature and "sewer air pneumonia."

NOTES AND FAMILY HISTORY OF CASES OF HÆMOPHILIA.

BY J. P. WIGHTMAN, M.R.C.S. ENG., L.R.C.P. LOND.,
SENIOR HOUSE SURGEON TO THE INFIRMARY FOR CHILDREN, LIVERPOOL.

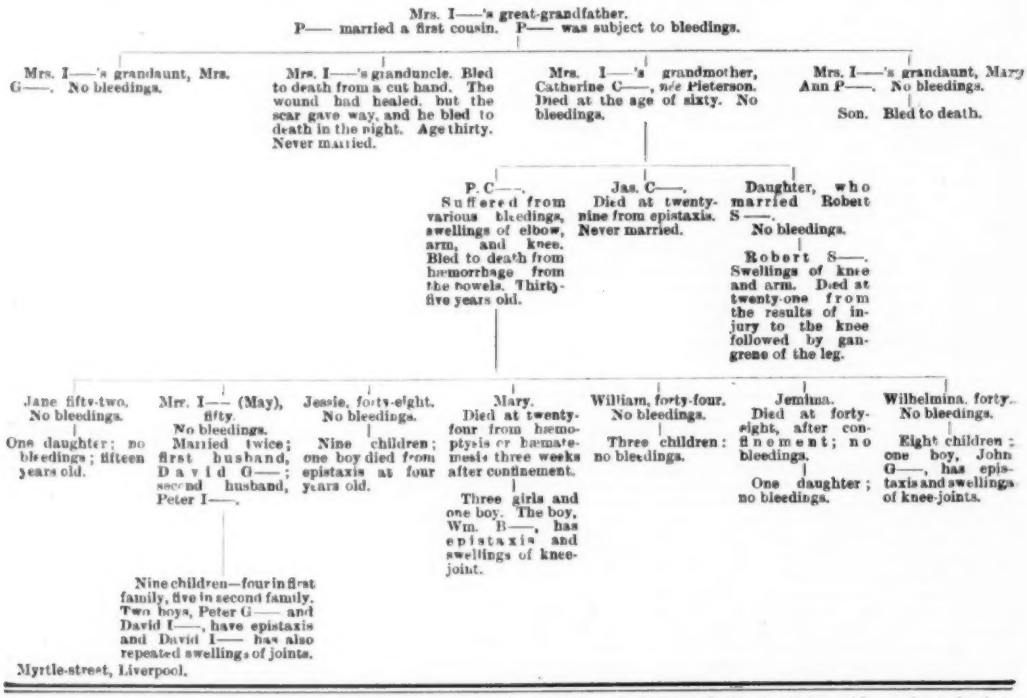
THE usual difficulty met with in tracing for any length of time the family history of cases of hæmophilia makes it worth while to bring forward the particulars of three cases occurring in children, first cousins, that have come under observation at the Infirmary for Children, Liverpool. For permission to publish the notes of these cases I am indebted to the kindness of Mr. R. W. Murray, surgeon to the infirmary, under whose care one of the boys has been.

CASE 1.—D. I——, aged thirteen, was admitted to the Infirmary for Children on Nov. 28th, 1893. The patient had attended on and off for several years for various severe losses of blood following slight injuries—e.g., cuts, extraction of a tooth, &c.—and also for several extra-peritoneal effusions due to climbing or jumping. His condition on admission was as follow. The boy was in great pain and rather pale; the left knee-joint was tightly distended by fluid. There was discoloration of the skin at the inner side of the joint, which was somewhat flexed. All movements of the limb caused acute pain; the right hip-joint was slightly flexed; there were fulness, hardness, and tenderness on palpation in the right iliac fossa, extending nearly to the middle line and almost up to the level of the umbilicus, but not backwards towards the loin. There was an impaired percussion note over this area. There was no sign of excess of free fluid in the peritoneal cavity. The urine was normal, as were also the motions. He remained as an in-patient for six weeks and was then discharged wearing a poro-plastic splint, the knee-joint being still a good deal enlarged and hotter than natural. All signs of the extra-peritoneal effusion had cleared up. On Jan. 31st of the present year the patient was again admitted for pain, swelling, and tenderness of the right ankle-joint. He was discharged on Feb. 14th, the left knee and ankle-joint being larger and hotter than natural. While in the infirmary in the painful stages sleep could only be obtained after subcutaneous injection of morphia. There was never any oozing from, or formation of hæmatomata at, the sites of puncture. Medicinally, he took hazeline and tincture of the perchloride of iron,

CASE 2.—J. G——, aged eleven years. He has been under observation for some years for spontaneous epistaxis, sudden swellings of the left knee-joint, and hæmatomata following slight blows. The left knee is much larger than the right and the lower end of the femur and upper end of the tibia appear to be a good deal thickened. There is no difficulty in walking or increased heat in the affected joint. At present he has a hæmatoma under the chin, the result of a fall.

CASE 3.—W. B——, aged fourteen years. He suffers from epistaxis and swellings of the knee-joint, similar to the previous cases.

Remarks.—There is nothing in the personal appearance of these patients to attract attention to them as being different from other boys. They deny ever having any prodromal symptoms. Mrs. I——, the mother of D. I——, is a very intelligent woman and has for some time been collecting details of past histories and present conditions of her relatives and their families. She is quite certain as to the accuracy of her information, and I think that the account may be taken as being correct. The history given embraces five generations—i.e., fifty-two lives—being the descendants of a man called Pieterson. Six males have died from hæmorrhage, the respective ages of five of these being thirty-five, thirty, twenty-nine, twenty-one, and four years. Four males living with the symptoms well marked are respectively eighteen, fourteen, thirteen, and eleven years old. The duration of life in these nine cases, it will be seen, is longer than usual. There is no history of any trouble with the umbilical cord at birth, or following vaccination, nor is there any history of petechial eruptions. The earliest appearance of symptoms known was at eighteen months, in the cases of the three boys mentioned above. Superficial ecchymoses used to appear on the arms and forearms whilst they were being taught to walk. A point of interest about the history is that Mrs. I—— has been married twice, and that in each family she has a son who has inherited the disease. The family history of the disease probably dates from before the man Pieterson, as he was subject to bleedings, as was also his son.


Mrs. I——'s great-grandfather.
P—— married a first cousin. P—— was subject to bleedings.
Mrs. I——'s grandaunt, Mrs. G——. No bleedings.
Mrs. I——'s granduncle. Bled to death from a cut hand. The wound had healed, but the scar gave way, and he bled to death in the night. Age thirty. Never married.
Mrs. I——'s grandmother, Catherine C——, née Pieterson. Died at the age of sixty. No bleedings.
Mrs. I——'s grandaunt, Mary Ann P——. No bleedings.
Son. Bled to death.
P. C——. Suffered from various bleedings, swellings of elbow, arm, and knee. Bled to death from hæmorrhage from the bowels. Thirty-five years old.
Jas. C——. Died at twenty-nine from epistaxis. Never married.
Daughter, who married Robert S——. No bleedings.
Robert S——. Swellings of knee and arm. Died at twenty-one from the results of injury to the knee followed by gangrene of the leg.
Jane fifty-two. No bleedings.
One daughter; no bleedings; fifteen years old.
Mrs. I—— (May), fifty. No bleedings. Married twice; first husband, David G——; second husband, Peter I——.
Nine children—four in first family, five in second family. Two boys, Peter G—— and David I——, have epistaxis and David I—— has also repeated swellings of joints.
Jessie, forty-eight. No bleedings.
Nine children; one boy died from epistaxis at four years old.
Mary. Died at twenty-four from hæmoptysis or hæmatemesis three weeks after confinement.
Three girls and one boy. The boy, Wm. B——, has epistaxis and swellings of knee-joint.
William, forty-four. No bleedings.
Three children: no bleedings.
Jemima. Died at forty-eight, after confinement; no bleedings.
One daughter; no bleedings.
Wilhelmina, forty. No bleedings.
Eight children; one boy, John G——, has epistaxis and swellings of knee-joints.

Myrtle-street, Liverpool.

THE TARTARATED SUBLIMATE TEST (SPIEGLER'S) FOR ALBUMEN IN URINE,

AND SOME ERRORS ATTENDING ITS USE.

BY GORDON SHARP, M.B. EDIN.,

LATE RESEARCH STUDENT IN PHARMACOLOGY, OWENS COLLEGE, VICTORIA UNIVERSITY, MANCHESTER.

Now that Spiegler's test for albumen in urine is being recommended in the medical journals it may be an opportune time for calling attention to some of the points of error likely to occur in its use. Spiegler's test was originally corrosive sublimate, 8; tartaric acid, 4; sugar, 20; and distilled water, 200: but I understand that the test has been recently modified, glycerine being substituted for sugar. Both sugar and glycerine are added for the purpose of raising the specific gravity of the resulting fluid, so that the lighter urine may float on the top, and thus any alteration in appearance can be readily noted at the junction of the two fluids. In the case of weak solutions of albumen, in the absence of chlorides the test fails to act, probably because when the albumen and the tartaric acid are brought into contact an acid albumen is formed which is not precipitated by the mercuric chloride. Thus the application of the test, however delicate it may be, is much restricted, being only of service in testing for albumen in such fluids as urine. Nay, more, if the urine contains only something like one-fourth the amount of chlorides normally present in urine, the test takes some little time to develop, and even after a time is not very perceptible, and in a urine containing only one-eighth the normal amount of chlorides the test may be said not to act at all well. These points can be readily confirmed by diluting urine, adding albumen (if none be present in the urine under examination), and applying the test carefully, so that two layers be obtained. These are significant points, for one might have a case of gouty kidney disease, in which large amounts of urine are often passed and in which chlorides are proportionately lessened in amount. A trace of albumen might be present, but the tartarated sublimate solution might fail to detect it. In cases of lobar pneumonia chlorides are diminished in amount in the urine or are occasionally absent, as occurred in a case under my care some little time ago. This point, so strongly emphasised by the late Hughes Bennett, is nowadays not so much attended to as it might be. Here, again, the test now under discussion would be of doubtful service, for if

chlorides were entirely absent it would not act (supposing albumen be also present), and if they were only sparingly present it might or might not act according to the amount of chlorides. A theoretical point also suggests itself. It is known that if albumen be precipitated by mercuric chloride the precipitate can be readily dissolved by the addition of a strong solution of sodium chloride, and if sodium chloride be previously added to a solution of albumen mercuric chloride very often fails to cause any precipitate. I say *very often*, because much depends on the strength of the solutions of mercuric chloride and sodium chloride. This action of a combination of the two chlorides on albumen has been taken advantage of in preparing solutions for use in antiseptic surgery, a double chloride to a large extent hindering coagulation of the proteids issuing from wounds and sores. Tartaric acid also hinders, to a large extent, any great precipitate of albuminous substances when united with mercury, and it, too, was at one time employed as an adjunct to mercuric chloride solution in surgical dressings. Might we not then have a concentrated urine in which chlorides were in great excess acting on any contained albumen, and rendering it highly soluble and non-precipitable by mercuric chloride? I think that such is possible.

From what has just been said the loopholes for error, which are opened first by adding anything of the nature of tartaric acid to mercuric chloride, and secondly by the presence of a large amount of a soluble chloride with albumen in the precipitation of albumen, will be at once apparent. So much reliance did I at one time place on the power of sodium chloride to dissolve precipitated albumen that I worked a good deal in trying to obtain a volumetric test for albumen, first by precipitating by mercuric chloride and then reading off the quantity of a standard solution of sodium chloride necessary to dissolve the precipitate. Constant results were not obtained and the work was abandoned for the time being. This again shows how fallacies may occur when we have to reckon with sodium chloride. The fact is, too little is yet known about albumen, and what we call albumen may be really an albuminate of, say, calcium. The action of mercuric salts goes a long way to show that it is something of this kind, as, for example, $CaAlb + HgCl_2 = HgAlb + CaCl_2$. However, the mercuric albuminate is evidently not a constant compound from the fact that the same quantity of sodium chloride does not always dissolve the precipitate as shown above. Lastly, it is doubtful whether all the tests put together are worth the old nitric acid test; the white characteristic cloud which it forms with albumen is well known and can hardly be mistaken by anyone. Picric acid, trichloracetic acid, and others are delicate—in fact, too delicate; besides, they possess other disadvantages: the first must be in concentrated aqueous solution, the second is rather expensive, and both are rare articles, while nitric acid is always handy; and if the strong acid be employed and care be taken to have two layers (one of acid at the bottom and one of urine above it), then the test leaves nothing to be desired, the urine having previously been tested by heating a separate portion.

Meanwood-road, Leeds.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

CASE OF CALCULUS IMPACTED IN THE MALE URETHRA, AND REMOVAL BY CRUSHING.

BY E. MANSEL SYMPSON, M.D., B.C. CANTAB., M.R.C.S. ENG.,
SURGEON TO THE LINCOLN COUNTY HOSPITAL.

ON Nov. 22nd, 1893, I was consulted by a young man aged twenty-eight who was suffering from impacted calculus in the penile urethra. The stone was readily felt externally, was about the size of the stone of a French plum and somewhat of the same shape, and was situated about three inches from the meatus. It had come down into the urethra a few hours previously, and was causing pain and difficulty of micturition, only a drop being occasionally passed. He had had a similar attack before when he was in Australia. I first tried to get the urethra distended all round the stone by compressing the meatus and getting him to strain, but he could do very little to help. Then I tried to manipulate it with my fingers, but without success. I next passed a pair of narrow long-bladed forceps down to the stone, to try to grip it, but the walls of the urethra kept squeezing into the teeth of the forceps. Upon this I tried distending the distal portion of the urethra with warm oil, and then, as the stone would not move outwards, I passed a catheter and made an attempt (which gave the patient so much pain that I was obliged to desist) to push it back into the bladder. He would not have an anæsthetic and I could not persuade him to go into the hospital, so, encouraged by the phosphatic débris which had come away on the catheter and forceps and the circumstance that an Australian surgeon had crushed the former stone also in the urethra, I commenced to crunch the stone away, holding it firmly between the left finger and thumb and opening and shutting the forceps quickly, but for a very short interval each time. I tried several pairs of forceps, butthe best seemed to be an ordinary pair of Spencer Wells' artery forceps, as the bulge about the hinge kept the walls of the urethra from getting between the jaws. Purposely I did not use any form of local anæsthesia, so that the patient could guide me if any part of the mucous membrane was nipped. After about two hours of this work, which had to be extremely gentle and gradual, most of the stone had disappeared and I was able to introduce a long pair of forceps, grip and smash the remainder and extract the fragments; the core was uric acid with a great bulk of phosphatic accretions. The patient bore the operation wonderfully well, micturated satisfactorily within a few hours after it, and more than two months after the operation was perfectly sound as far as the urethra was concerned. The after-treatment consisted in keeping him in bed for a day, putting him on citrate of potash and infusion of bearberry and recommending him to take plenty of salt with his food.

James-street, Lincoln.

THE TREATMENT OF INTUSSUSCEPTION BY GENERATING CARBON DIOXIDE WITHIN THE BOWEL.

BY JOHN THOMAS CRESWICK WILLIAMS, M.R.C.S. ENG., L.R.C.P. LOND., L.S.A.

ON Dec. 21st, 1890, I was called to see a boy aged eight months. The mother stated that the child had passed a restless night, that he suddenly started out crying, and at times was rolling with pain. Upon examination he was found to be well nourished, and appeared to be healthy and well developed. He had suffered from slight diarrhœa during the week and for the previous twenty-four hours had had violent straining and had passed slimy mucous stools tinged with blood. When put to the breast he soon stopped sucking and immediately vomited. Cow's milk with water and all other nourishment were likewise quickly rejected. The vomit had an offensive smell, but was not stercoraceous. The abdomen was somewhat distended. Midway between the umbilicus and the crest of the ilium on the left side a swelling was visible; it was doughy to the feel, dull upon percussion, and sausage-shaped, its long axis lying parallel to the fold of the groin. There was tenderness upon pressure in the vicinity of the swelling. I tried all the prescribed methods of treatment, including kneading, inversion combined with manipulation, injection of warm water, and the insufflation of air, and all proved to be of no avail. I suggested laparotomy, but the parent would not consent to any cutting operation. It occurred to me that if it were only possible to generate gas within the intestine and prevent its escape through the anus, the gas, passing upwards, might reduce the intussusception. I therefore procured two basins, each containing about half a pint of warm water. In one I dissolved a drachm and a half of citric acid, and in the other two drachms of bicarbonate of soda. A flexible catheter was attached to a Higginson's enema and passed into the bowel to the extent of nine inches, whereupon I injected first the acid and afterwards (slowly) the alkaline solution. The result was the generation of carbonic acid gas, which was perceptible by a distension of the abdomen. The catheter was quickly withdrawn, and the nates were held firmly together for two or three minutes, in order to prevent the escape of the gas. During this time the child made a strong effort to dispel it. After a few minutes the abdominal swelling above described had entirely disappeared.

The child ceased to vomit, and in two days passed a natural stool, recovery being quite complete.

Remarks.—It could easily be ascertained what volume of carbonic acid gas is generated by the combination of various acids and carbonates, and it would be of value to know what amount of gas could with safety be rapidly generated within the bowel; for, as these cases call for prompt treatment, it might be necessary in an emergency to use such domestic remedies as chalk, or washing soda with vinegar, or a Seidlitz powder. Of course this treatment is not free from danger, and in a case which is far advanced, and where gangrene has set in, it might cause rupture of the gut; but if the case is taken early, all other means having failed, and laparotomy is not allowed, I believe there is full justification in resorting to this mode of treatment.

Whitland, South Wales.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Procemium.

METROPOLITAN HOSPITAL.

STRANGULATION OF THE TESTICLE WITHOUT ROTATION; REMARKS.

(Under the care of Mr. PAGET.)

WE have published in THE LANCET a complete list of cases in which strangulation of the testis has been recognised to follow twisting of the cord. In most of them the testis was undescended—that is, retained in the inguinal canal—and ill-developed. In Mr. Paget's case the testis appears to have been suddenly forced from a position within the internal ring to one outside the canal. Although the testis was necessarily small, when it had been forced outside the external ring, two causes would act more especially in producing strangulation: the unaccustomed stretching of the cord, and the rigidity of the opening through which the testis had escaped. A case of somewhat similar character has been recorded by Mr. Jacobson, in which strangulation of a testis, which suddenly descended into the groin, but not through the external ring, took place and the testis was removed by operation.

The patient was sixteen years of age. The right testicle had never descended into the scrotum, nor had it been felt in the inguinal canal. About four years before, the boy said, it came down once, producing pain; but after some days it returned into the body. On the evening of Nov. 25th, while in the act of lifting a heavy weight, the testicle suddenly descended into the scrotum, and he experienced acute pain. The following morning he vomited; the bowels had not been opened and the pain still continued. On the 27th he was admitted into the Metropolitan Hospital. The patient was examined on the 28th. Just outside and below the external abdominal ring and close under the skin there was a firm, tense, rounded, irreducible swelling, about an inch in diameter; it was freely movable and was not sensitive to pressure. The skin over the lower part of it was hot and red. Between it and the external abdominal ring, when gentle pressure was made, something was felt to slip away from the touch, like a small lax hernia. He was slightly feverish; the bowels had not acted, even after an enema. The vomiting had stopped. Mr. Paget cut down and first came upon a firm, dark blood-clot, about three-quarters of an inch in diameter, lying in a thin envelope of areolar tissue. This lay to the inner side of a sac, at the bottom of which was the testicle, of a dull purplish black, full of effused blood, and almost gangrenous. There was no twist of the cord. The sac had a very narrowed neck, only just admitting a probe. The testicle was removed, but not the sac. The bowels were not moved till the fourth day and after the administration of calomel. At this time he was slightly jaundiced for a day or two. There was some sloughing of the tissues at the upper end of the wound, so it was laid open and left to granulate, and there was no further trouble.

Remarks by Mr. PAGET.—The testicle on section was found to be soddened with blood and wholly disorganised, but there was no putrefactive smell from it. The round blood-clot that lay just outside it, enclosed in a thin film of areolar tissue, so closely resembled a knuckle of strangulated bowel that very careful dissection was necessary. Several cases have lately been published of strangulation from twisting of the cord, but in this case it was not twisted.

BROMLEY COTTAGE HOSPITAL, KENT.

CASE OF EXCISION OF THE CÆCUM FOR MALIGNANT GROWTH; INTESTINAL ANASTOMOSIS BY USE OF SENN'S PLATES; RECOVERY.

(Under the care of Dr. HERBERT J. ILOTT.)

THE number of cases operated on for the removal of malignant disease of the cæcum in this country is a limited one, and therefore the account of the following case will be interesting. The operation described is one which is called for by malignant growth in this region—namely, complete removal of the disease and the immediate re-establishment of the intestinal canal. The prognoses in operations for malignant disease situated in this part of the bowel are not unfavourable; for, as pointed out by Matlakowski, carcinoma of the cæcum is not rarely a very chronic condition that may exist for years, only giving rise to symptoms of obstruction and the presence of a tumour. It will be noted that the longitudinal incisions which were made for the re-establishment of the connexion between the ileum and the colon were only one inch in length. It is important that the future progress of the case should be reported, for to many these incisions will appear to be rather small in view of possible contraction. In an account of a case, however, recorded by Dr. Kammerer, no contraction had taken place in a similarly formed opening two inches and a half wide four months after the date of the operation.

A married woman fifty years of age, who had borne eleven children and had good general health, was admitted to the Bromley Cottage Hospital under the care of Dr. Ilott on June 26th, 1893. She had a somewhat pallid complexion and had lost flesh and strength of late. Her state of ill-health had developed during the past six months, when she had begun to experience pain in the right side of the abdomen, backache, and a feeling of pressure in the hypogastrium. About four months ago she felt a lump above the right groin which steadily increased in size. There had been irregularity in the action of the bowels, a state of constipation alternating with diarrhœa. Shortly after her admission into the hospital she had relaxed motions containing blood and mucus. On examination a tumour was discovered in the right inguinal region, in the position of the cæcum. It was nodular in feel, rounded, and freely movable, especially in a direction inwards. The tumour was tender when handled. It could not be felt by the vagina or rectum. The uterus was retroflexed and the cervix widened; the inguinal glands on both sides were somewhat enlarged, and on the right side one gland was more so than the rest. On July 1st she was seen in consultation by Mr. Walsham, who concurred with Dr. Ilott in the view that the tumour was probably a cancerous growth involving the cæcum and that an attempt at its removal by operation should be at once made. The patient, having been previously prepared, was then brought into the operating-room, and Dr. Ilott opened the abdomen by an incision about four inches long in the right semilunar line over the tumour, the line of the incision being slightly curved inwards. On opening the abdominal cavity the growth was seen to be covered by the omentum. This was raised and pushed inwards, and the tumour was then seen to be, as was thought, a malignant tumour of the cæcum. There was an enlarged gland close to the cæcum. The patient's state under anæsthesia being good, it was decided, under Mr. Walsham's advice, to proceed with the operation. After the affected part of the bowel had been isolated by sponges wrung out of warm carbolic lotion packed behind it, the tumour was lifted out of the wound and freed by cutting away the mesocolon with scissors, any bleeding vessels being secured and divided by ligature with fine carbolised silk. A hole being made in the mesentery on either side of the tumour, opposite a part of healthy

bowel, the lower end of the ileum and the ascending colon were clamped by pieces of rubber drainage tubing passed through the holes and tied round the bowel sufficiently firmly to occlude its calibre. The bowel was then divided transversely with scissors on either side of the tumour, and the whole of the cæcum, the vermiform appendix, and the enlarged gland attached were removed. The mucous membrane of the respective divided ends of bowel were then carefully inverted with a probe, and the serous coat was closed over the section by means of numerous points of Lembert's suture. When this had been done so as to thoroughly close the divided ends the rubber tubes, which acted as clamps, were removed, and the holes in the mesentery were united as well as the divided edges of the mesocolon. Incisions about an inch in length were then made in the longitudinal axis of the bowel on the side opposite to the mesenteric attachment, each incision being about two inches from the divided and now closed ends. Into these openings Senn's decalcified bone plates (which Mr. Walsham had brought with him in anticipation of their use) were inserted and secured; the serous surfaces around the openings into the bowel were then scarified lightly with a needle so as to favour their adhesion by plastic exudation, and the margins of the openings were brought into correspondence by uniting the sutures attached to the plates, the two lateral threads passing through the wall of the intestine on either side of the opening. As an additional security a row of Lembert's sutures were put at intervals all round, and one of the appendices epiploicæ was sutured to the coats of the bowel opposite the junction in order to act as an omental graft. The surrounding peritoneum and site of the operation were then thoroughly cleansed and dried, and the wound in the abdominal walls was united by carbolised silk sutures, sal alembroth gauze and wool dressings being applied. The operation lasted an hour and three-quarters, during which the patient was most carefully kept under chloroform by Dr. D. T. Playfair, Dr. Chatterton assisting Dr. Ilott and Mr. Walsham. The patient stood the operation fairly well, but was suffering greatly from shock at its close. Opium was given in doses of fifteen minims of the tincture three times in the first twenty-four hours. She did not suffer from sickness, but was troubled by flatus. At 6.30 P.M. the pulse was 108, and the temperature 101° F. On July 3rd the pulse was 96, the temperature being 100·4°. One grain of opium in pill form was prescribed. On the 5th the bowels acted very copiously, the motions being partly formed, after which there was great pain in the abdomen, lasting for about three hours. Opium was again given by the mouth, and laudanum and hot flannels were applied to the abdomen. The patient became very collapsed after the action of the bowels, requiring free administration of stimulants. There was frequent distressing hiccough, but no vomiting or abdominal distension. The wounds were inspected and were found to be looking well. The temperature was 101° and the pulse 100. The relaxed state of the bowels continued. The patient was given astringent chalk mixture together with opium by the mouth at frequent intervals, and, as regarded food, she took arrowroot, sago, beef tea, and milk, and port wine and brandy as stimulants. On the 9th she was ordered pills of sulphate of copper and opium. On the 10th and 11th the diarrhœa had ceased and she was allowed fish, custard pudding, and bread. On the 13th she had boiled chicken, and on the 19th she was placed on full diet and a pint of stout a day. The wound, which looked well at first, had its healing delayed by troublesome suppuration under the abdominal muscles, the pus burrowing inwards towards the middle line. This happened after the removal of the sutures and was preceded by local hardness and tenderness. The parts from which the pus came were syringed out frequently with a warm solution of izal and were often dressed. Under this treatment the suppuration declined, and the wound became soundly healed. On Sept. 2nd the patient left the hospital and went to Brighton for a month. She returned looking well and strong and is now able to walk for considerable distances, looking and feeling perfectly well. She was seen in November, 1893, by Dr. Ilott, who inspected the abdomen, and the cicatrix was found to be sound, firm, and soft. Nothing abnormal could be felt at the site of the operation, and the enlargement of the inguinal glands had subsided.

Description of the growth by Mr. EDGAR WILLETT (Curator of the Museum at St. Bartholomew's Hospital).—The portion of intestine removed weighed altogether six ounces and measured four inches in length after hardening; it consisted of the cæcum and vermiform appendix and had a margin of healthy colon measuring three-quarters of an inch at its distal end and a rather narrower margin of healthy ileum at the proximal end. The greater part of this (over three inches) was the seat of a typical malignant ulcer, involving the whole circumference of the bowel, both sides of the ileo-cæcal valve, and extending slightly into the ileum. The growth had also extended into the vermiform appendix for about half an inch. The fat surrounding the bowel was thicker and firmer than is normally found, and was evidently inflamed, but it was not apparently directly invaded by the malignant growth, nor had the omentum or any other viscus formed adhesions. The specimen is preserved in the museum of St. Bartholomew's Hospital (Series xviii., No. 2027 D.) Microscopical examination showed it to be a typical case of adenoid carcinoma with extensive ingrowths into the muscular tissue of the bowel.

Note by Dr. ILOTT.—I desire to record my grateful thanks to Mr. Walsham, the honorary consulting surgeon to the Bromley Cottage Hospital, for his able suggestions and skilful assistance at each stage of the long and difficult operation, and also to the above-mentioned colleagues, without whose help it could not have been carried out.

COVENTRY AND WARWICKSHIRE HOSPITAL.

TRACHEOTOMY FOR DIPHTHERITIC OBSTRUCTION IN A CHILD TWELVE MONTHS OLD; RECOVERY; REMARKS.

(Under the care of Dr. PHILLIPS.)

WE commented last year in this department of THE LANCET on the performance of tracheotomy at an early age, especially for obstruction due to diphtheria. Mr. Parkes in his work on "Diphtheria" alludes to the case of a child successfully operated on by Scontetten for croup. The influence of age on prognosis after tracheotomy for diphtheria and allied conditions has been well shown by Messrs. Lovett and Munro in their paper on the results in 327 cases of the operation. They say: "The age of the patient is, of course, an important consideration; the mortality rate falls as the age increases up to eight and ten years. In 1600 cases collected from Cohen, Schuller, Birnbaum, Martin, &c., and tabulated with regard to the age of the patients, the recovery rate in children less than two years old was 20 per cent., rising steadily until the age of eight years was reached, when it was 40 per cent. The 327 cases reported here followed much the same course, except in the youngest children, when the operation proved much more fatal. Of forty-two patients under the age of two years only three recovered—one eleven months old and two fifteen months old, all nursing children." They have also given a summary of 21,853 cases of tracheotomy recorded in general medical literature, with a mortality of 28 per cent. For the notes of this case we are indebted to Mr. C. Hamilton Whiteford, house surgeon.

A female infant aged twelve months was admitted into the Coventry and Warwickshire Hospital at 6 P.M. on Dec 5th, 1893, suffering from dyspnœa, with lividity of the face and recession of the thoracic parietes on inspiration. The pulse was 144, the respiration 52, and the temperature 101° F. The history was that the child had been quite well up to twenty-four hours previously, when it developed an attack of "croup," which rapidly became worse. Chloroform was at once administered and tracheotomy performed, Parker's tube being used. Marked improvement in the breathing followed the operation. Pieces of membrane were coughed up at once on introducing the dilators, and other pieces appeared at intervals during the following week. The temperature, which on admission had been 101°, rose to 104·2° at 10 A.M. on the following day, after which it steadily fell, and reaching normal on the fourth day after operation, it did not again rise above 100°. The child was fed with milk, with one ounce of brandy, one drachm at a time, in twenty-four hours. Fourteen days after the operation Parker's inner tube coated with indiarubber was introduced, the child breathing both through the wound and the larynx for three hours. Seventeen days after the operation the tube was removed entirely and the child breathed without it, chiefly through the wound, for twelve hours, when, breathing becoming laboured, chloroform was administered on account of struggling and difficulty in

reintroducing the tube into the wound, which had partly closed; the tube was reinserted. On the thirtieth day after the operation the tube was left out entirely, and on the thirty-fourth day the wound was closed and breathing through the natural channel was completely re-established. Some slight hoarseness of the voice passed off in a few days.

Remarks.—Recovery in children under two years is rare. The case illustrates the advantages of operation before the patient has become moribund and of alcohol even for an infant twelve months old.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Cases of Pleurisy caused by the Pneumococcus, and with Constitutional Symptoms resembling those of Pneumonia.—Relationship between Disorders of Digestion and Neurasthenia.

AN ordinary meeting of this society was held on Feb. 27th, Dr. CHURCH, Vice-President, being in the chair.

Dr. WASHBOURN communicated a paper on cases of Pleurisy caused by the Pneumococcus, and with Constitutional Symptoms resembling those of Pneumonia. He described three cases. In the first case the symptoms were those of pneumonia, but the physical signs were not characteristic and the sputum was not rusty. The attack began suddenly with a rigor, and on the tenth day the temperature had fallen and the constitutional symptoms had disappeared. The patient was considered to be convalescent, but the physical signs did not clear, and the temperature subsequently rose. An exploration of the chest revealed the presence of pus. A drainage-tube was inserted and the patient made a good recovery. The pus was found to contain the pneumococcus by the usual bacteriological methods. The case was at first considered to be one of pneumonia followed by an empyema, but looked at it in the light afforded by the other cases he believed that it was one of primary empyema. In the second case the constitutional symptoms were those of pneumonia, and included high temperature, cough, rapid breathing, delirium, and herpes. The physical signs, though not typical, were not more atypical than they often were in pneumonia. The patient died after a few days' illness. At the post-mortem examination the lung was found to be healthy, but there were fifty-four ounces of pus in the right chest. The pus contained the pneumococcus. In the third case, that of a child, there was double pleurisy with some effusion. A few ounces of fluid were removed by aspiration, and were found to contain the pneumococcus. The case terminated fatally, and at the post-mortem examination both pleuræ were found to be covered with thick tenacious fibrin. It was well known that the pneumococcus was the most common cause of croupous pneumonia, and the same organism had been found in pleurisy and empyema. Sufficient stress had, however, not been laid upon the fact that the pneumococcus might produce the same constitutional symptoms when invading the pleura as it did when invading the lung. Dr. Washbourn believed that the second case showed that this was true. The third case was of interest, inasmuch as the constitutional symptoms were similar to those of pneumonia. The patient might have recovered, and the case would probably have been considered to be one of pneumonia. He believed that many cases diagnosed as pneumonia, but with equivocal signs, were really cases of pleurisy caused by the pneumococcus. He would point out the importance of exploring the chest in such cases, and would urge the necessity of the bacteriological examination of the pus of empyemata, as it was possible that, when due to the pneumococcus, a simple aspiration would be sufficient.—Dr. HALE WHITE said that, in addition to the two cases under his observation which were recorded in the paper, he had seen four other cases during the last few months. A man was brought to hospital with every sign of pneumonia, there having been a rigor, herpes, and rusty sputum, with rapid breathing and high temperature. A loud rub on the right side obscured the physical signs. The temperature gradually fell in eight days and he was only slightly better; it then rose again and the man died suddenly. At the post-mortem examination a small empyema was found at the base of the right lung, and pus had soaked into the lung, which was partly gangrenous. The patient also suffered from malignant endocarditis. A girl came into hospital with a fairly typical history of pneumonia. At the left base there was much dulness, but only a little bronchial breathing. Three ounces of pus were obtained on aspiration. After eleven days the temperature gradually fell and she died suddenly in the night. At the necropsy no signs of pneumonia were found, but there was a thick layer of fibrinous lymph in the pleura, with some turbid fluid. A middle-aged woman was admitted with marked signs of pneumonia at the left base, but the area of dulness overshadowed the other signs. The temperature gradually fell and then began slowly to mount again. Repeated attempts to find pus resulted in the evacuation of four ounces; after that she recovered. A boy aged six was admitted with a typical history of pneumonia. The temperature, after falling, began slowly to mount again. Half an ounce of pus was found by aspiration, and after that the patient did well. He related other cases to show the association of the pneumococcus with empyema, meningitis, and endocarditis, and said that it perhaps explained the association of jaundice with one case of pneumonia and of retraction of the head with another. In those cases of empyema due to the pneumococcus the signs would not be typically those of pneumonia, the local signs being especially aberrant: the temperature usually fell slowly, the physical signs did not clear up readily, and the patient did not seem to be much better after the fall of the temperature. With the further rise of the temperature diarrhœa often developed. The disease was general, and might affect not only the pleura, but also the meninges &c. Pericarditis, when it occurred, was due to an infection of the pericardium by the diplococcus, and not to simple extension from the pleura, as had been commonly taught. There need not always be pus present to explain the physical signs, for in one case with the second rise of temperature there occurred a rigor and a large fibrinous exudation without empyema.—Dr. SANSOM said that it did not seem to him that influenza had been excluded from these cases. The bacillus of influenza was very apt indeed to be associated with other well-known bacilli. Thus, influenzal pleuro-pneumonia was recognised, and influenza gave remarkable help to the development of tuberculosis. The cases related resembled the forms of pneumonia often met with since the influenzal epoch, the general symptoms being severe, while the local condition might be atypical. The influenza bacillus, having a tendency to attack nervous structures, disturbed the trophic condition of the lungs, and then the pneumococcus could develop more exuberantly.—Dr. KANTHACK said that it was generally admitted that the pneumococcus was the common cause of pneumonia. Since October he had examined fifteen uncomplicated cases of pneumonia, and in all the pneumococcus of Fraenkel was present; in thirteen it was in pure culture, and in two others it was associated with the staphylococcus pyogenes aureus and a streptococcus respectively. If the sputum of a patient before the pneumonic crisis was injected into a rabbit or guinea-pig the animal died from pneumococcus septicæmia, but if sputum taken after the crisis was injected the animal was rendered immune from pneumococcus infection. He examined a case of purulent meningitis and found the lungs free, but the pus in the cerebral and spinal membranes contained pure cultures of pneumococcus. In a case of ulcerative endocarditis the pneumococcus was found associated with the staphylococcus albus and aureus; the same three organisms were found in embolic abscesses in the lungs. In a case of purulent peritonitis in a young girl and in another of suppurative pericarditis and peritonitis with empyema, in two cases of otitis media, in one of empyema of the frontal sinus and in one of pneumonia suddenly fatal and associated with empyema pure cultures of the pneumococcus were found.—Dr. CHURCH asked whether any control experiments had been performed with the pus from ordinary empyema to see whether the pneumococcus could be found in them.—Dr. HALE WHITE, replying for Dr. Washbourne, said that pneumococci had been found in the pus of ordinary empyemata. He said that it was remarkable that the pneumococcus often did not produce the toxic symptoms if it was not developing in the pleura or lung. People badly affected with the toxin of pneumonia were liable to die suddenly.

A paper was then contributed by Dr. A. S. ECCLES on the Relationship between Disorders of Digestion and Neurasthenia. The definition of Beard that "neurasthenia is a chronic functional disease of the nervous system, the basis of which is impoverishment of nervous force,

waste of nervous tissue in excess of repair," was adopted. References were made to Thomson and Kowalewsky in support of the contention that neurasthenia arose from disordered digestion. Motor inefficiency of the gastro-intestinal tract appeared to be the commonest factor in the production of nerve malnutrition. Of 65 cases in which neurasthenia and disorders of digestion coexisted 19 presented signs of gastric ectasis and 17 were examples of intestinal muscular atony. Of the remaining 29 cases 13 suffered from diarrhœa and 16 from disorders of digestion not associated with dilatation, constipation, or diarrhœa. Dilatation of the stomach had been recorded by Dujardin-Beaumetz, Champagnac, Germain Sée, Albert Mathieu, and others as coexistent with neurasthenia. The cases quoted by Dr. Eccles had been observed daily for periods varying from a fortnight to ten weeks, the dimensions of the stomach having been ascertained by physical and other tests. An appendix of cases in a tabular form accompanied the paper, but certain cases were detailed in support of the view that local abdominal disorder preceded and caused neurasthenia in a large number of cases, and diagrams illustrating these were appended. The present paper was devoted to the consideration of those cases in which either dilatation of the stomach or coprostasis had induced malnutrition of the nervous system, the record of twenty-nine other cases of gastro-intestinal disease resulting in neurasthenia being reserved for a future communication.—Dr. ALTHAUS said that he objected to the term "neurasthenia" because it was not only indefinite but it had unpleasant associations. The exclusive seat of these troubles was in the brain, and he therefore proposed the term "encephalasthenia." The three principal areas affected were the intellectual sphere, the sensori-motor area, and the medulla. The gastric symptoms were due to disturbances of the gastric centre of the bulb. Two forms of dyspepsia were usually present, one from undue excitability and the other from loss of power in the medullary centre. The former was associated with irritable dyspepsia, with heart-burn, gastralgia, and vomiting, and was also associated with a red, furred tongue, while in the latter there was atonic dyspepsia with retarded digestion. A neurotic inheritance was a constant predisposing cause.—Dr. HERSCHELL asked whether the hydrochloric acid in the gastric juice of these cases had been estimated.—Dr. ECCLES, in reply, said that in his paper he had used the terminology of Beard. His view was that the cerebral centres suffered from malnutrition induced by peripheral irritation. He had estimated the hydrochloric acid present by Gunsberg's test.

MEDICAL SOCIETY OF LONDON.

Third Lettsomian Lecture on the Clinical Features and Treatment of Peritonitis.

AT an ordinary meeting of this society on Feb. 26th Mr. TREVES delivered his third Lettsomian Lecture. The following is an abstract:—

The general symptoms of peritonitis are so well known and have been so precisely described that they call for no special consideration in the present lectures. It will be necessary only to deal with the characteristics of certain individual symptoms and to define the clinical peculiarities of certain varieties of peritoneal inflammation. The general arrangement of the nerve-supply of the parietes of the abdomen and of the abdominal viscera enables the most rapid possible conduction of reflex impulses. Absolute rigidity of the abdomen, a limitation of the abdominal respiratory movements, and a tenderness of the surface are among the very earliest symptoms of acute trouble within the abdomen, the tenderness depending upon an actual hyperæsthesia of the surface rather than on tenderness within. These signs are most marked in cases which are sudden and acute, and where the peritoneum at the time of the outbreak was perfectly normal. Great retraction of the abdomen has been for the most part noticed in connexion with perforation of the stomach. As peritonitis advances, both the hyperæsthesia of the skin and the contraction of the abdominal wall usually disappear, and some cases run their entire course with a flaccid abdominal wall and with scarcely any tenderness. The pain, which the patient feels to be actually situated within the abdomen, has the peculiarity that it is not as a rule to be localised at first, but is commonly referred to the great abdominal nerve centres; but as the symptoms progress the localisation of the pain becomes usually more and more precise, assuming that the trouble remains to a certain extent local. Into the great question of the physiology of peritoneal shock I have no intention of entering. Certain symptoms which are collectively known as the phenomena of shock mark almost without exception the clinical beginnings of those cases of peritonitis which are abrupt in their onset or acute or even subacute in their course. These symptoms are evidently entirely due to an impression upon the nervous system and are independent of inflammation, on the one hand, or of septic intoxication, on the other. The signs of sudden and grave disturbance of the peritoneum are pain, profound exhaustion, a distressful anxiety, pallor, a small, soft, quick pulse, cold extremities, shallow respiration, and vomiting; these symptoms are common to all cases in which there has been a rude and abrupt impression made upon the nerve centres within the abdomen. To these common phenomena of a crisis within the abdomen Gübler has applied the convenient term of "peritonism." That the nervous system plays a prominent part in the symptoms of an advanced peritonitis is evident from a study of intestinal neuroses: for colic, diarrhœa, meteorism, and feculent vomiting, and even some signs of strangulation may be present without intestinal lesion. It is usual in peritonitis for the mental faculties to remain clear up to the very verge of death. In the 100 hospital cases already alluded to there were only 11 with intense headache or delirium, all of which proved fatal. A rigor does not often mark the commencement of peritonitis. There were 13 instances among the 100 cases, of which 10 died. The degree of meteorism met with in peritonitis varies considerably and is influenced by conditions which are not yet fully understood. It is not uncommonly absent in cases of septic intoxication attended with symptoms of a low type. It is most marked in peritonitis attended by actual intestinal obstruction, in examples of perforation, in cases in which there is thrombosis of the mesenteric vessels, and in instances in which opium has been freely administered. It does not appear to vary with the amount or degree of the vomiting, nor does it seem to depend upon obstruction in the lumen of the bowel or upon accumulation of gases in the intestine above the lumen of the occluded point. Experiments seem to show that meteorism, as met with in disease, depends almost entirely upon gross disturbances in the circulation of the blood through the affected portion of the intestines. Could one single symptom be selected as the one more usually present in all cases of peritonitis, it would probably be vomiting, but this is most usually slight; it is more alarming from its persistence and the evil prognosis it suggests. It is very little in the more insidious septic cases, in the aged, and in the subjects of advanced visceral disease, but it is usually marked and copious in the peritonitis following strangulated hernia; it is conspicuous in perforative peritonitis, but it is usually absent in cases of perforation of the stomach. In the peritonitis of typhoid fever the vomiting becomes marked if the action of the bowel ceases. Vomiting is not pronounced in intestinal disease, including mischief in the appendix; in the latter case it is less where the bowels act regularly. It is seldom very distressing in pelvic peritonitis. It is rarely absent in those cases following operation or accidental wounds. Constipation is a conspicuous feature in peritonitis. In the 100 cases from the London Hospital the bowels are classed as "loose" in 28. From a study of these cases it would appear that, other things being equal, a better prognosis attends the cases in which the bowels are acting, and that a specially evil prognosis must be associated with the cases marked by absolute constipation. As to lung complications, among the 100 cases there were no less than 17 in which pleurisy or pneumonia appeared after the peritonitis set in; 7 of these were examples of peritonitis of intestinal origin, 5 of them being cases of hernia or of perforation, and 10 were cases of peritonitis starting from the pelvic organs or from sources outside the abdomen, 4 of the latter following a wound in the abdominal wall. The nature of the peritoneal exudation appears to have little bearing upon the lung complications. The temperature in peritonitis is liable to fluctuations so numerous and extreme that it is difficult, if not impossible, to deduce any type of temperature which may be considered to be characteristic of the disease. It is of little guide in estimating the gravity of the case or in forming a dogmatic prognosis. Perforation leads at first to a sudden drop in temperature; if the body heat be at the time high the onset of diarrhœa is associated with a more or less rapid diminution of fever. Of very grave prognosis

is the case the temperature chart of which is for consecutive days below normal. The most robust evidences of fever are common in cases in which a plastic peritonitis, or one leading to well-encapsuled pus, is present, while the examples associated with a low range of temperature often mark the cases in which a general sepsis is more pronounced than the peritoneal inflammation. I show a series of charts giving details of temperature which illustrate more fully the various forms of peritonitis. Before dealing in detail with the treatment of peritonitis a very brief reference may be made to the treatment as carried out in bygone years. In 1813 Thomas Sutton laid down his lines of treatment as follow. First, absolute rest; secondly, purgatives; thirdly, abstinence from food; fourthly, the application of cold to the abdomen; fifthly, blood-letting in the acute cases; and sixthly, opium to be given only occasionally and very sparingly—its especial indication was the presence of intense pain. He made frequent use of sulphate of magnesia. Benjamin Travers in 1812 advocated the same measures. He considered an evacuation of the bowels to be a matter of primary importance, relied largely upon enemata, and inclined towards warm fomentations. The modern developments of treatment are too well known to need detailing. In considering the treatment of any grave affection it is well to recollect that certain of the so-called symptoms of a disease are not crass evidences of a disturbing evil within the body, but are rather the natural expression on the part of the organism of an attempt to rid itself of a trouble. Many symptoms are in fact curative acts and are the measures of a natural treatment and not the mere purposeless signs of an unnatural disturbance. The exhaustion, the rigidity of the abdominal wall, the pain, the vomiting, and the frequent sense that the bowel needs to be emptied of flatus would suggest the recommendation of absolute rest, of attempts to relieve pain, of starvation, and under certain circumstances of means to relieve the intestine. The more conspicuous indications, looked at in this light, appear to be the securing of quiet within the enclosure of the abdomen and of effecting an evacuation of the alimentary canal. This suggestion from the therapeutics of nature is not disregarded in the following recommendations for treatment. 1. Absolute rest in the recumbent position appears to be the first obvious indication. The upper limbs should be protected by a woollen jacket, and no reasonable restraint should be offered to the patient's inclination to hold the hands above the head. 2. The old rule of eighty years ago of giving as little food as possible by the mouth cannot be improved upon, but there are two extremes to be avoided. The first is the rigid, unreasoning, and often needlessly cruel prohibition of food of any kind by the mouth, and the second is the reckless and intemperate use of ice or iced fluids. The right course appears to lie betwen these two extremes, and it is better within reasonable limits to be guided by the patient's own instincts than by a blind formula founded upon a doubtful physiology. The actual feeding should be carried out by rectal injections, small in amount, weak, and made of some peptonised meat extract or infusion. It should be given slowly and at the temperature of the body. From two to two and a half ounces of peptonised beef-tea with half an ounce of brandy may be given every three or four hours. Thirst is better relieved by an injection of half a pint of warm water given alone than by diluting the nutrient enema to that extent. Nutrient suppositories are not so well suited for these cases. Irritability of the rectum may be to some extent met by washing it out now and then by a weak injection of cocaine. Of course, in cases with or without diarrhœa, in which there is no vomiting, all that is given may be given by the mouth. The dirty state of the mouth may be palliated by keeping the teeth brushed, by washing the mouth out with a 1 in 80 carbolic solution or with a mixture of eau de Cologne and water, by actually cleaning the tongue, and by keeping it moist by glycerine and water. 3. Give as little opium as is possible. The indication for it is actual pain, and not mere restlessness and misery. It should never become a feature in the routine treatment of peritonitis. It masks the symptoms, hinders the natural process of cure, and hampers the treatment. In those who are dying from general peritoneal sepsis a greater sense of relief usually follows the hypodermic injection of strychnine. 4. Aperients can never be adopted in the routine treatment of peritonitis. In the larger proportion of cases this measure is entirely useless, and in septic forms it is more or less impracticable. But there is no doubt that there is within the intestine an amount of noxious or poisonous matter which remains harmless so long as the viscus retains its normal condition, but which may lead to septic symptoms if certain changes are induced in the wall of the bowel or possibly in its contents. These injurious matters within the disordered bowel can, within certain possibly narrow limits, be got rid of by the action of aperients. Some gross disturbance in the complex mechanism of the bowel wall is needed to render the poisonous contents of the intestine capable of being readily introduced into the system. Of the effect of a thorough evacuation of the alimentary canal in some instances surgical experience can testify. The most successful treatment of acute obstruction of a certain grade is that which provides for a thorough evacuation of the loaded gut. I am convinced of the value of the aperient treatment in the earliest stages of perityphlitis and of the pursuit of the same measure throughout in selected instances. A further illustration of the subject from the same standpoint is afforded by that alarming intestinal condition known as "pseudo-ileus." It was pointed out by Mr. Tait, and has been made evident to most surgeons who have followed his teaching, that if an action of the bowels can be obtained at the outset of the symptoms, either by the administration of a purgative or by an enema, the trouble in a large proportion of cases passes away and the patient makes a good recovery. Aperients are of no avail in established general peritonitis. In the peritonitis following hernia, or associated with acute intestinal obstruction the complete evacuation of the bowel is desirable for reasons apart from the peritonitis. In septic peritonitis and true perforative peritonitis aperients are useless. In a large proportion of the examples of perityphlitis and in the pseudo-ileus which may follow operation the prompt evacuation of the bowels is often attended with the very best results. On both theoretical and clinical grounds the thorough emptying of the intestine before any abdominal section is performed may be regarded as absolutely essential. 5. Blood-letting may with advantage be more extensively employed, especially in the robust forms of localised peritonitis. In perityphlitis the application of half a dozen leeches often acts with magical effect. 6. The operative treatment of suppurative peritonitis, especially when the effusion is localised, has been remarkably successful. Records of the operation extend back into the eighteenth century, and all that modern surgery can lay claim to is the application of the treatment with greater boldness, with greater frequency and with infinitely less delay; but the operative treatment of general diffused non-tuberculous peritonitis has so far no record to boast of and little progress to chronicle. I am doubtful whether a single human life has been saved by surgical interference in a genuine case of peritoneal toxæmia. Surgical treatment has been most discouraging in acute peritonitis following gangrenous hernia, operation, and puerperal infection. It has met with but little better results in cases of perforation in which the serous inflammation has been well established. As to the actual mode of operating adapted for the different varieties of peritonitis I would venture to draw attention to the following points. In localised purulent peritonitis make an incision into the collection by the most direct route. When the pus has escaped pass a rubber fenestrated drainage-tube to the bottom of the cavity and apply a gauze dressing. After twenty-four or thirty-six hours irrigate the cavity twice daily and now and then introduce a little iodoform emulsion. In cases of perityphlitis where the thin greenish matter is not well encapsuled carefully introduce a drain composed of strips of iodoform gauze. In generalised peritonitis, if the exudation be serous, evacuate the fluid, dry the peritoneum in its most dependent parts by gauze sponges, and close the abdomen without drainage. When the exudation is sero-purulent or purulent irrigate with a sterile 0·6 per cent. salt solution made warm, dry the dependent parts with sponges, freely dust the involved peritoneum with iodoform powder and introduce a long rubber fenestrated drainage-tube. In cases of plastic peritonitis free the adhesions only to such an extent as to allow of the escape of imprisoned pus, leaving, if possible, untouched any perforation which may be sealed with lymph, liberally dust the serous membrane with iodoform, and drain, if necessary, by strips of iodoform gauze. In the performance of an abdominal section, to prevent the onset of peritonitis the operating room should be surgically clean, the patient should be clean, and the operator should be clean. The attaining of this end appears to be as satisfactorily accomplished by the charwoman, the laundress, and the nail-brush as by complex chemical processes. Ligatures and catgut are best kept in an ethereal solution of corrosive

sublimate and can be dipped into sterilised water just before they are used. Dilute the 1 in 20 solution of carbolic acid, in which the instruments have been placed, with boiled water before they are used, so as to make it about 1 in 100. The less the peritoneum is touched, stretched, and handled the better. To close the wound the best plan is to steady and straighten the edges with blunt hooks while the needle is being passed, to sew up the peritoneum with a continuous suture of fine silk, and to close the rest of the parietal wound with a single row of silkworm gut sutures, which embrace all the soft parts excepting the serous membrane, and which are passed by straight needles. Dust any damaged surface of peritoneum with iodoform (except in the case of children), and leave the peritoneal sac as dry and clean as is possible consistent with gentle handling. Blood is better removed by sponging than by irrigation, and so are healthy cyst contents, fluid from hydatids, bile, and matter escaping from the stomach or intestine; but in cases of a considerable outpouring of putrid pus or a copious escape of gut contents it may be better that the whole peritoneal cavity be irrigated, the fluid being introduced at low pressure, but in a wide stream. When the abdominal cavity is full the surgeon's hand is moved with great gentleness among the intestines so as to rinse the coils of bowel; then raise the upper end of the operating table so as to aid the escape of the fluid and sponge out the dependent parts. Drainage is necessary when either an actually noxious material is left in the peritoneal cavity or when it is assumed that an extensive effusion will follow the laparotomy. I have ceased to use the glass drainage-tube and prefer a large, stout rubber tube well fenestrated. Frequent changes of the patient's position afterwards will assist in the process of drainage. The iodoform gauze drain is useful in selected cases. Some surgeons, either to supplement or to replace drainage, allow the wound to gape or support it merely by a few quite loose sutures. This measure has been especially advocated in the treatment of perforative or purulent peritonitis. In conclusion, it only remains to be said that the surgical treatment of peritonitis has not yet reached a position which is either satisfactory or secure. There has been no lack of boldness in the measures used, and little sense of discouragement at the results obtained. Surgical enterprise has been directed against effects and against damage done, rather than against causes and the beginnings of evil. The surgeon holds the same position in regard to peritonitis which was held some thirty years ago in regard to wounds and more accessible forms of inflammation. At that time he dealt only with the consequences of pathological wrong-doing, just as now he concerns himself with the prevention of troubles which he has learnt to control. Peritonitis will be more successfully treated when measures can be directed against the sowing of the wind rather than, as now, against the curbing of the whirlwind.

CLINICAL SOCIETY OF LONDON.

Inhalation of Carbolic Acid in Phthisis.—Malformation of Sternum.—Aphasia.—Rupture of Anterior Crucial Ligament of Knee-joint.—Compound Fracture of Pelvis.—Dislocation of Hip.—Trephining for Extra-Dural Hæmorrhage.—Myxœdema. — Operation for Sarcoma of Clavicle.—Dentigerous Cyst. — Multiple Neuritis. — Diphtheritic Paralysis.

A CLINICAL MEETING of this society was held on Feb. 23rd, the President, Mr. HULKE, being in the chair.

Dr. WILBERFORCE SMITH showed a case of Phthisis in which a successful result had followed the Inhalation of Carbolic Acid. The patient was a man aged twenty-five who presented signs of dulness together with moist sounds at the apex of one of his lungs. His temperature was high and there was also a fistula in ano. He went to St. Leonards, where he lived under good hygienic conditions, and he used a large inhaler made from an ordinary hat box, in which flannel charged with carbolic acid was suspended. He continued these inhalations for eighteen months.

Dr. FLETCHER LITTLE showed a youth aged nineteen with a Poorly Developed Sternum. The joint between the manubrium and gladiolus permitted free movement, as did that between the gladiolus and ensiform. The gladiolus itself was retracted during inspiration.

Dr. SANSOM showed a case of Aphasia in a young woman aged twenty-two. At first there was right hemiplegia with very complete aphasia. The hemiplegia passed away and she now could perform fine movements with the hands, but the aphasia remained. Mitral stenosis was present and the origin of the hemiplegia was probably from embolism. She had been treated with bromide of ammonium, valerian, and arsenic.

Mr. STANLEY BOYD exhibited a man aged twenty-four, who had ruptured the Anterior Crucial Ligament of one of his Knee-joints. When playing football three years ago he was charged from behind and he fell with one of the players on him and his legs crossed under him. There was effusion for eight or ten weeks, but he afterwards recovered sufficiently to walk or run. Since then the joint had repeatedly given way, and he had recently wrenched it. After this the joint had more than once become locked in the semi-flexed position and it had to be reduced by manipulation or extreme flexion.—Mr. CROFT remarked on the looseness of the joint and the power of antero-posterior movement in it, which he considered to indicate that the anterior extremity of the external semilunar fibro-cartilage and the lower end of the anterior crucial ligament were both detached, the external semilunar cartilage being folded back into the intercondylar notch. He considered it justifiable to open the joint and to ascertain the precise condition, which could then be dealt with surgically.—Mr. W. G. SPENCER recommended the application of the actual cautery to the lateral ligaments so as to shorten them.—Mr. BARKER inquired whether there was any grating, indicating that the ligament had become detached together with a portion of bone. In the latter case it would be easier to repair it.—Mr. R. W. PARKER observed that where the crucial ligaments were destroyed there was displacement backwards of the tibia.—The PRESIDENT remarked that the function of the crucial ligaments was a vexed question. The anterior crucial ligament was supposed to become tense in extension, but this patient was unable to hyper-extend his joint.—Mr. BOYD, in reply, said that the tibia would only drop backwards if both the crucial ligaments were ruptured.

Mr. BATTLE showed a child aged two and a half years who had suffered a Compound Fracture of the Pelvis into the Vagina. He had wired the broken bones together in front, and had passed a drainage-tube from the upper wound into the vagina. The child made a perfect recovery.

Mr. BATTLE then showed a girl aged nineteen who had sustained a Dislocation of the Right Hip on to the dorsum ilii. There had been a history of lameness for eight years before that. It was repeatedly reduced, but the dislocation recurred, and so he made an incision over the joint, which he found to be distended with blood-stained fluid. He easily reduced the dislocation and passed three ivory pegs through the head of the bone into the acetabulum. The wound healed readily, the head of the bone remained in its place and there was now fairly free movement in the joint.

Mr. BATTLE likewise showed a boy and a woman who had recovered after Trephining for Extra-dural Hæmorrhage, and whose cases would be described at the next meeting of the society.

Dr. ARTHUR DAVIES showed a Myxœdemic Patient whom he had first exhibited in February, 1892. Treatment by the administration of thyroid gland in various forms had been persevered with since, but whenever it had been discontinued a relapse occurred, the first indication of which was a sensible gaining in weight.

Mr. BLAND SUTTON brought forward a young woman, the sternal half of whose clavicle he had excised in June, 1890, for Myeloid Sarcoma. There was at present no indication of the return of the growth, and the patient was in good health. A bond of fibrous tissue had formed between the stump of the clavicle and the acromion, and the patient could perform all movements of the upper extremity perfectly. An account of the case had been previously read to the society.

Mr. STORER BENNETT exhibited a man aged twenty-five years with a Dentigerous Cyst in the right upper Maxilla. There was a swelling above the right upper central incisor, on incising which pus and serum escaped. In the cavity a hard substance was felt, which was found to be a tooth with the crown inverted.

Dr. MOTT then read a paper on a case of Multiple Neuritis in a man aged thirty-four years, who was admitted into Charing-cross Hospital, under the care of Dr. Green, on April 26th, 1893, for kidney disease. The patient had not had syphilis, gonorrhœa, or rheumatism. For some weeks previously he had suffered from chills, sweats and epistaxis. Five days before admission he had swelling of the right knee and pain in the leg and hand of the same side.

When examined it was found that he had pain, swelling, and redness in the right arm and leg, with patches of œdema and swelling of the joints. The arm was stiff. There were albumen and blood in the urine, and there was considerable pyrexia, varying between 102° and 103 6° F. No cardiac or pulmonary disease was detected. About a week after admission diarrhœa with hæmorrhage from the bowel occurred, and it was thought that the case was possibly typhoid fever and not rheumatism. The diarrhœa ceased after a week. The temperature again began to rise to 103° and more, and there was further evidence of paralysis in the right limbs and some anæsthesia. On examination the reaction of degeneration was found in the muscles of the right arm and leg, and a few days later, coincident with a pyrexial exacerbation, commencing reaction of degeneration was found in the left limbs. Moreover, there were marked anæsthesia and analgesia in the paralysed parts. The bladder and rectum not being affected, Dr. Mott diagnosed multiple infective neuritis. The pyrexia lasted for two months, and there was a decided relationship between the paralysis of groups of muscles and the pyrexial exacerbations. On many occasions he examined the blood during the pyrexia, and he found a great excess of leucocytes and micrococci. Cultivations of a diplococcus were made under strictly antiseptic precautions; but neither Dr. Arkle nor Dr. Mott was able to produce any poisonous effects by the introductions of the chemical products or the organisms themselves into rabbits. The man was alive and in good general health that day, though there was still some paralysis in his lower extremities. There had been more improvement since he was shown at the society in November last. He had regained power of flexion and extension in the hip-joints, ankle-joints, and knee-joints, but he was still too weak to stand. Dr. Mott was unable to assign a cause for the obvious septic infection, unless it were pyelitis.

Dr. HALE WHITE gave the particulars of a case of Diphtheritic Paralysis which proved suddenly fatal owing to tea entering the bronchial tubes. The patient was a man who, three weeks after a severe attack of diphtheria, became paralysed. On admission to hospital the arms and legs were very weak, and there was impaired movement of the abdominal muscles. Food regurgitated through the nose, and there was unilateral paralysis of the palate. Muscular and tactile sensation were slightly impaired. When drinking some tea he suddenly began to cough; this ceased in a few seconds, and the patient became very distressed in his breathing, sitting up in bed in great distress and panting for his breath exactly as if he had been suffering from asthma. There was at no time any evidence that the larynx was obstructed. The difficulty of breathing grew worse; towards the end the patient became very livid, and he was dead in less than ten minutes from his taking the tea. The pulse continued good till the end. At the necropsy an ounce and a half of tea were found in the bronchial tubes, and this was absolutely the only cause of death. At the bedside it was recognised that probably a little fluid had found its way into the air passages, but it was hoped that either the patient would be able to cough it up or that it would cease to irritate and that the paroxysm would pass off. Dr. Hale White pointed out that although there were very rare instances on record in which the impaction of solid food in cases of diphtheritic paralysis had caused death, he had not come across any case in which such a small amount had caused death by spasm of the bronchial tubes, which was in all probability what happened to his patient, the result being no doubt favoured by the weakness of the abdominal and deglutition muscles.—Dr. SANSOM asked whether it was not possible that Dr. Mott's case was one of influenza. A patient of his own exhibited distinctly the cardiac sequels of influenza, although he was supposed to be the only one in his household who escaped. In another case, that of a girl aged thirteen, under his care in the London Hospital, neuritis of both legs developed after influenza, there being dropped feet and no response whatever to electricity. That case occurred at the beginning of the influenzal epoch, and it commenced with pain in the calves and tenderness on pinching. He mentioned another case of a boy, who, while influenza was rife, found himself unable to walk upstairs without clinging to the banisters. On examination there was found to be distinct pyrexia and evidence of neuritis in the right leg; later there was rapid wasting of the lower thoracic muscles and of the upper part of the right rectus abdominis, so that a local anterior poliomyelitis must have been associated with the neuritis. Many such cases had been recorded abroad, and he thought that the strong analogy to beri-beri also pointed equally strongly to its being the influenzal form of neuritis.—Mr. R. W. PARKER said that he considered it difficult to understand that diphtheritic paralysis could be a form of peripheral neuritis. In cases he had examined he had failed to find any pathological changes in the nerves.—Dr. GOODALL remarked that in most of the cases he had seen it was difficult to refer the lesion to a central origin. They were typical instances of peripheral neuritis; besides, Dr. Sidney Martin's work seemed to have put this matter beyond doubt. He considered Dr. Hale White's case to be very uncommon. He had seen symptoms of abductor paralysis develop very suddenly, causing necessity for immediate tracheotomy. In all cases where swallowing could not be properly performed recourse should be had to feeding with a nasal tube.—Dr. KANTHACK said that he had examined the cultures from Dr. Mott's case and had found that the organism was a diplococcus not met with in the skin. He recommended the consecutive injection of the cultures day by day into animals in order to maintain a condition of chronic infection. Dr. Martin's experiments undoubtedly proved that the neuritis was due to the toxine of diphtheria. It was not really a neuritis, but a primary nerve degeneration.—Dr. HALE WHITE mentioned that he published a case in the last volume of the Clinical Society's Transactions which bore out that related by Dr. Mott. The patient suffered from septicæmia, and then developed all the symptoms of peripheral neuritis. After amputation the stump healed, and the paralysis passed off.—Dr. PERCY KIDD asked Dr. Mott whether he had examined the medulla oblongata.—Mr. GOULD mentioned a case in which solid food passed into the air passages in diphtheritic paralysis. The patient, a child, was eating bread-and-butter when he suddenly choked, and on tracheotomy being performed the masticated bread-and-butter passed out of the tracheal wound. The boy ultimately did well.—Dr. GLOVER thought that Dr. Mott dismissed too lightly the element of alcohol in the case, for the man had admitted taking a quart of beer daily.—Dr. MOTT, in reply, said that there was no history of influenza, and besides that the case very closely resembled others which had been reported before influenza had become common. He had studied carefully the notes of a case of post-influenzal neuritis, but the clinical picture was not the same. He thought that very possibly there must have been some septic source, but it had not been discovered. The amount of alcohol taken was not sufficient to produce the disease.—Dr. HALE WHITE, in reply, thought that his patient had possibly some deficiency of power in the larynx, but that had not produced the fatal result. No microscopical examination of the medulla was made, because the symptoms seemed to be completely explained without it. He held it to be absolutely proved that the diphtheritic paralysis was a degenerative neuritis.

OTHER METROPOLITAN MEDICAL SOCIETIES.

HUNTERIAN SOCIETY.—The annual general meeting of this society was held at the London Institution on Wednesday, Feb. 14th, Mr. F. GORDON BROWN, President, being in the chair.—Dr. W. Kington Fyffe was elected an ordinary Fellow of the Society. The reports of the Council and of the auditors and the report of the Library Committee for the past year were read.—It was proposed by Mr. TATHAM and seconded by Mr. THORP that these reports be adopted and ordered to be printed and circulated among the Fellows.—A hearty vote of thanks to the President for his valuable services during the past year was proposed by Mr. COTMAN and seconded by Dr. CHARLEWOOD TURNER.—A vote of thanks to the Vice-Presidents and Librarian was proposed by Mr. TATHAM and seconded by Dr. PITT.—A vote of thanks to the Council, honorary secretaries and auditors was proposed by Dr. DUNDAS GRANT, seconded by Dr. DAVIES, and replied to by Dr. F. J. SMITH and Dr. HINGSTON FOX.—A ballot was then taken for the appointment of officers for the ensuing year; the scrutineers reported that the following officers had been elected. President: Charters James Symonds, M.S., M.D. Vice-Presidents: John Poland, Henry J. Thorp, John S. E. Cotman, and Peter Horrocks, M.D. Treasurer: F. Charlewood Turner, M.D. Trustees: H. I. Fotherby, M.D., and F. M. Corner. Librarian: Arthur T. Davies, M.D. Orator:

Patrick Manson, M.D., C.M., LL.D. Secretaries: R. Hingston Fox, M.D., and T. Horrocks Openshaw, M.S. Council: F. Gordon Brown, James Galloway, M.D., Hope Grant, T. Mark Hovell, Francis R. Humphreys, Thomas Marshall, M.B., G. Newton Pitt, M.D., George W. Potter, M.D, F. J. Smith, M.D, R. G. Tatham, Alfred H. Tubby, M.S., and John F. Woods. Auditors: S. H. Appleford, M.D., F. R. Humphreys, R C. Lucas, B.S., and F. J. Smith, M.D.—The meeting then adjourned to the theatre to hear the annual oration.—On the evening of Wednesday, the 14th inst. (anniversary of the birth of Hunter), Dr. DUNDAS GRANT, as orator of the society, delivered an address on Aspects of Medical Life—John Hunter, Andrew Clark He compared the lives of the two men, and drew some interesting parallels between them—their nationality, length of life, uncertain health, work in the Royal services, untiring industry, accuracy in details, generosity, and death in the midst of their work. The striking contrasts were equally clearly brought out. Dr. Grant attributed much of Hunter's greatness to his allowing his original intelligence free play without the trammels of educational tradition, to his habit in youth of observing and studying natural objects instead of reading about them, but in a very large measure also to the teaching and influence of his highly cultured brother, William Sir Andrew Clark owed much to having received a high-class education in surroundings which, though not poor, were certainly far removed from luxury, and which fostered habits of industry, self-denial, and devotion. Dr. Grant commented on the "dignity of the profession," and recommended all who really valued it to study the lives and works of such men as the subjects of his address.

PROVINCIAL MEDICAL SOCIETIES.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 21st, Dr. W. Hunter, President, occupying the chair.—Dr. TEW read a paper on the Minor Causes of Typhoid Fever, in which was shown by means of charts the decrease of mortality from this disease during the last twenty years. He said the affection was favoured by hot seasons, especially if followed by abundant rainfall. The *de novo* origin of the disease rested on supposition; mild ambulatory cases were sometimes an unsuspected source of danger. The prevalence of diarrhœa and typhoid fever were greatest about the same period of the year. The germs might be borne by the air and so communicate the disease; the danger of leaving infected discharges exposed in ashbins &c. was insisted on. The subject was freely discussed.—Mr. WARING then read notes on Two Cases of Uræmia, in which the symptoms came on suddenly with vomiting, headache, and convulsions, but without suppression of urine. The cases were contrasted with two others in which there were much œdema, suppression of urine, and coma.—Mr. ANDERSON showed a girl aged thirteen, from whom he had successfully removed a large and rapidly growing Sarcoma of the Ovary.—Dr. WILLIAM RANSOM showed a man aged forty-eight, who had been successfully treated by ergot for Hæmaturia of two years' duration. The cause of the symptoms was probably a papillomatous growth of the pelvis of the kidney.—Amongst the specimens exhibited was one by Dr. HANDFORD, consisting of Leucocythæmic Blood, in which the white corpuscles were more numerous than the red. Other specimens were brought forward by Dr. WILLIAM RANSOM, Mr. ANDERSON, and Mr. BELCHER.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 15th, the President, Mr. RICHARD FAVELL, being in the chair.—Mr. PYE-SMITH showed—(1) A woman aged thirty-four, with a tumour of ten years' growth attached to the hard palate, which it completely covered. (2) A woman aged forty-six, with a cystic growth in the left axilla of one year's duration, and an enchondroma of the little finger of the same side which had been present as long as she could remember. (3) The right temporal bone and the lungs from a case of pyæmia following subdural abscess and septic thrombosis of the lateral sinus consequent upon old disease of the middle ear and antrum in a boy aged ten. The antrum was cleared, the abscess evacuated, and the internal jugular vein tied in the neck on admission to the hospital.—Dr. KEELING exhibited specimens of Ovarian and Vaginal Cysts, Cauliflower Cancer of the Cervix, and Retained Placenta from a case of Abortion. Remarks were made on some points of interest in the cases.—Dr. MARTIN showed two Multilocular Ovarian Cysts. The main point of interest in the second specimen was the difficulty of diagnosis between ovarian cyst and encysted ascitic fluid. Both patients made excellent recoveries.—Dr. HUNT gave particulars of a severe case of Psoriasis which had been cured by extract of thyroid gland. After the reading by Dr. KITE of notes of a case of Idiopathic Tetanus which recovered, Dr. CROCHLEY CLAPHAM read a paper on Insomnia, in which, after dealing with the physiology of sleep and the necessity of its periodic recurrence for the maintenance of healthy brain function, he indicated the causes leading to its suspension. He then discussed the various remedies for sleeplessness, and advocated the use of the more simple ones, recourse not being had to the more powerful until these had failed; the more gentle the means employed to induce sleep the more natural, he considered, would be the sleep induced. Dr. Clapham objected to the use of chloral or bromide of potassium in cerebral anæmia, especially when occurring in melancholia, alcohol or opium being more suitable. He recommended bromide of potassium in insomnia due to overwork, and chloral hydrate in sleeplessness with sustained high blood-pressure or when distinct pyrexia was present. Of the newer hypnotics he preferred chloral amide and sulphonal In conclusion, he urged that all hypnotics were edged tools, which should not only be carefully used, but their abuse jealously guarded against.

TORQUAY MEDICAL SOCIETY.—The annual meeting of this society was held on Jan. 17th, and the following members were elected to serve as officers during the current year:—President, Mr. P. H. Gardner; Vice-President, Dr. J. Alexander; Hon. Sec., Mr. G. Young Eales; Council, Dr. T. Finch, Mr. W. Odell, Dr. W. W. Stabb, and Mr. J. H. Harris.—On Feb. 21st an ordinary meeting was held, the President being in the chair.—Dr. H. HUMPHREYS read a paper on Food and Diet, in which he advocated a more varied vegetable diet than is customary at the present day. He said that under the extremely different kinds of food used by various nations there was an underlying unity which did not escape the observation of Hippocrates. All food was made up of four kinds of foodstuffs. There was, perhaps, only one form of proteid substance of which the very various proteids of the animal body were, it may be, only slight modifications. This view was rendered highly probable from the fact that the infant in its ever-growing body elaborated most of the proteids from the casein of milk. Most of the dietetic errors of the day sprang from wrongly made bread. In white bread the mineral constituents of the wheat were wanting. Baker's brown bread, though better in its composition, was seldom satisfactory. Cerealin in the bran was itself a ferment and made the yeast fermentation difficult to regulate. Two conditions were necessary for good bread: first, entire wheatmeal must be used; and, secondly, yeast should be discarded and the aerated process followed. The extended use of lentils and other pulses was advised. Animal fat was often nauseous, especially to children, and could be entirely replaced by vegetable fat in nuts, which were easily digestible if taken before the appetite was satiated. A few easy reforms would do away with rickets and bad teeth, and provide wholesome and suitable food in health and disease.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

OBSTETRICAL SECTION.

Polypus of Uterus.—Double Ovarian Tumour.—Tumour of Broad Ligament.—Vaginal Hysterectomy.

A MEETING of this section was held on Feb. 2nd, Dr. Macan being in the chair.

Mr. LANE exhibited a Polypus of the Uterus and read the following notes:—An unmarried woman, who stated her age to be forty years, was sent to the City of Dublin Hospital on Nov. 29th last. She had been attended by a gynæcologist for a year previously owing to her suffering from a profuse red discharge. In February, 1890, the discharge had lasted for fourteen days and was rather heavy, and from that date the changes, as a rule, returned every five weeks and lasted for from fourteen days to three weeks. He saw the patient for the first time in November, but owing to the discharge having commenced on that day he had not examined her. When the discharge ceased she again came to the hospital, and on examination this tumour was found to be projecting into the vagina, but, owing to the small size of the vagina and the

tenderness of the lower part of the abdomen, he had been unable to say definitely whether it was a polypus or an inverted uterus. When he next examined her there was not so much tenderness, so that he was able to find the uterus lying above the tumour and directed to the right side. He then passed a sound and determined to try to remove the tumour at once. The patient was anæsthetised, and he caught the tumour near the pedicle with a vulsellum and commenced twisting it, but as it appeared to be breaking down he applied a larger vulsellum and was able to twist off the tumour. He had not a curette with him, so he simply washed out the uterus, there being but a very slight discharge. He had seen the patient twice since she left the hospital, and although the cervix had contracted very much it had not returned to its normal condition.

Dr. W. J. SMYLY exhibited a specimen of Double Ovarian Tumour. He said that it had been removed from a lady aged about sixty years. Her abdomen was enlarged to about the size of an eight months pregnancy. On examination he found on the right side a tumour which was slightly movable, and in front there was free ascitic fluid. On making a vaginal examination he found a cystic enlargement in Douglas's pouch. The uterus could not be palpated. He diagnosed a double ovarian tumour—one above the uterus and the other in Douglas's pouch. On opening the abdomen fluid escaped, and he then removed an ordinary cyst. He ligatured the pedicle with catgut and found another cyst about as large as the fœtal head in the posterior cul-de-sac. This was a proliferating one. It also contained a small amount of sebaceous matter, while the solid portion of it had a fibrous appearance. — In answer to a question, Dr. SMYLY said that he was not satisfied with the silk ligature.

Dr. MACAN showed a specimen of Tumour of the Broad Ligament. He thought at first that it was a dermoid cyst of the ovary, and in size it was about as large as the fœtal head. The patient was one from whom about four years ago he had removed a dermoid cyst of the left ovary. He removed the tumour, which was adherent to three pieces of the omentum, but in endeavouring to separate the adhesions it burst, and blood and coagulum escaped. There was difficulty in stopping the hæmorrhage, and the tumour looked very like an extra-uterine gestation, but it seemed to have been a blood cyst of the broad ligament.

Dr. LOMBE ATTHILL read a paper on Vaginal Hysterectomy, with special reference to its performance in cases of malignant disease of the uterus. After expressing his disbelief as to anything more than temporary benefit following supravaginal amputation of the cervix in such patients, he related three cases in which the disease originated in the interior of that organ, and in which the operation was performed with marked success. In one of these four years had since elapsed, and the patient continued to enjoy perfect health. The other two were comparatively recent cases; in one about a year and in the other only nine months had elapsed since the date of the operation; they were, to all appearances, however, cures. Dr. Atthill considered these cases as typical of the class of patients on whom hysterectomy should be performed, and that, too, at the earliest possible date. He hesitated to recommend its performance if the disease had extended downwards from the cavity to the cervix, or in cases in which the uterus, even to a limited extent, was engaged. He also considered that where the cervix was the primary seat of the disease the operation of hysterectomy, though, perhaps, justifiable, was seldom successful in preventing recurrence.—Dr. W. J. SMYLY said that he recently seen the patient on whom Dr. Atthill had performed the first operation, and she was in perfect health. He thought that the reason why this operation had made such little progress in these countries was that they seldom obtained cases to operate on in a sufficiently early stage. He could only reiterate what Dr. Atthill had said regarding doubtful cases. If there was a doubt after a microscopic examination he would be guided by the symptoms, and if they were such as to necessitate operation he would extirpate the uterus whether it was cancerous or not. He meant such cases of adenoma, even benign, and of chronic metritis, where, after curetting, &c., the hæmorrhage was continuous. With regard to the diagnosis as to whether the disease had gone beyond the reach of the knife, if in doubt at all he would not operate. The uterus should always be freely movable; it should come down with ease, and on making an examination per vaginam and per rectum the broad ligaments should be found to be free from disease, and also the utero-sacral ligaments. The operation was most successful in cases where the disease was not far advanced. He also agreed with Dr. Atthill regarding the bladder. He thought it much easier to retrovert the uterus and then pull it down through the vagina. He looked upon the removal of the ovaries as very important. In the first place the disease might spread along the tubes to them; and in the second place, if the functions were active they might cause trouble, and the patient might subsequently have an abdominal pregnancy. — After a few remarks by Mr. HORNE and Dr. BATES, Dr. MACAN said they must recognise that they were rather behindhand in performing the operation. Of course, in all cases where there was a cancerous uterus they should operate unless there were very good reasons against it. The only question was, what were the exact causes that should prevent them from operating?—Dr. ATTHILL, in reply, said he had no intention of bringing anything novel before them, but simply a few interesting cases. The operation of hysterectomy was a simple one, and no one would hesitate to remove the cancerous uterus just as they would remove a breast. He thought that as long as the operation was safe they were perfectly justified in performing it, even if the cancer recurred.

PATHOLOGICAL SECTION.

Fracture of Base of Skull.—Osseous Union of Fracture of Patella, with Fracture of Femur.—Mediastinal Tumour (Columnar-celled Cancer).—Urinary Organs from Case of Death from Catheter Fever.

A meeting of this section was held on Feb. 16th, the President, Dr. SCOTT, being in the chair.

Dr. E. H. BENNETT showed a specimen of Fracture of Base of Skull, which had been accompanied by the usual symptom of maniacal delirium; and another of Osseous Union of a Fracture of Patella associated with Fracture of Femur. He attributed the completeness of the osseous union to the presence of the latter lesion and considered it as quite possible, and even probable, that the two fractures had occurred simultaneously. He considered that the explanation of frequent non-osseous union was separation of the fragments. There was always plenty of fluid effused into the joint to lift up any aponeurotic structures which might have fallen in.

Dr. FINNY exhibited a specimen of Mediastinal Tumour (Columnar-celled Cancer). It was taken from a man aged sixty-five, who had complained of weakness and emaciation for two years, and for three months before death of hoarseness and cough, with a small quantity of muco-purulent sputum. On his admission to Sir Patrick Dun's Hospital the left vocal cord was found to be partially paralysed, without there being any tumour or inflammatory disease of the larynx; an enlarged gland was to be felt in the right and left supra-clavicular regions, and a comparatively dull note on percussion was present over the manubrium. Œdema of the right neck and arm, and then of the left neck and thorax, set in, while the lower half of the body and legs were unaffected, and general cyanosis of the face, with great varicosity of the surface of the chest, pointed to great obstruction of the superior vena cava. The œdema almost entirely disappeared during the last fortnight of the patient's life. The diagnosis of mediastinal tumour was confirmed by the necropsy, which revealed a very large hard tumour filling the anterior mediastinum and extending back to the front and left side of the trachea. The microscopic examination of hardened and stained specimens made by Dr. Earl showed the nature of the growth to be columnar-celled cancer with a considerable amount of fibrous stroma.—Dr. PARSONS said it was difficult to explain the origin of the cancer. It had been suggested to him that it might have sprung from the remains of the thymus gland, and this he considered to be very probable.—Mr. COX gave a short account of a similar case which he had seen.

Professor MYLES exhibited the Urinary Organs from a Case of Death from Catheter Fever.—Dr. JAMES LITTLE asked whether there had been any suppression between the rigors and the patient's death, or whether any history of chronic retention existed. He recollected three cases in which death in one of them, and severe illness of four or five months' duration in the others, had followed emptying of the greatly distended bladder with a catheter. One was that of a gentleman who had come to him complaining of thirst and some other symptoms, and in whom he had found a greatly distended bladder. He drew off his urine, and the patient afterwards exposed himself to the cold. He shortly afterwards became unconscious, passed a very small quantity of putrid urine, and was dead in two days.—Dr. BENNETT

mentioned the case of a patient on whom internal urethrotomy had been performed, and who shortly afterwards had a rigor and suffered from suppression of urine for forty-eight hours, but eventually recovered. Another case was that of a man who died from pyæmic abscesses in his lungs five days after the passage of a sea-tangle bougie in order to dilate a stricture. In these cases the rigor had followed after the first effort at micturition, and he considered this to be due to some septic absorption.

Reviews and Notices of Books.

Text-book of Nervous Diseases. By CHARLES L. DANA. Second Edition. New York: William Wood and Co. 1893.

WE have so recently noticed in our columns the first edition of this text-book that it is needless now to do more than call attention to the issue of a new edition. The only addition of importance is a chapter on "Neurological Therapeutics." In this chapter we find an account of the different methods of treatment pursued in nervous diseases, such as suspension, the administration of testicular fluid, and such like. The author seems to have more faith in such therapeutic vagaries than we should have expected; he seems, indeed, to be a sanguine therapeutist. Although there are evidences of haste both in the grammar and spelling in this chapter, it will no doubt prove a useful addition to the book.

Measurement of Light and Colour Sensations. By JOSEPH W. LOVIBOND, F.R.M.S. London: George Gill and Sons.

THE author of this work, who writes from the Colour Laboratories, Salisbury, Wiltshire, states in the preface that he gives a record of some investigations on light and colour carried out whilst he was perfecting a colorimeter which he terms "the tintometer." He uses the ordinary terms for colour—red (carmine), orange (orpiment), yellow (lemon yellow), green (emerald green), blue (cobalt), and violet (French mauve)—and their mixtures as colours, and with white light are quantitatively stated by means of a scheme of notation similar in exactness to that employed in quantitative chemistry. The optical instrument employed is a rectangular tube resembling an elongated stereoscopic box ten inches long, with a septum in the middle, terminating in a knife edge at the eye-piece, the aperture of which it divides into two equal parts. At the other end there are two openings which admit two equal but separate beams of light to the eye-piece in such a manner that on looking through it the eye commands a simultaneous distinct view of both openings. The knife edge of the septum, being inside the range of vision, does not disturb this distinctness of view. An aperture near the distal opening permits a tube containing the fluid to be examined to be inserted, whilst on the other side of the septum there are grooves for the reception of the standard slips of coloured glass. A reflector at a little distance throws a beam of light into the instrument, and a slight modification fits it for the examination of opaque-coloured objects. The author considers that each of the six-colour rays presents fifty-six colour units distinguishable by the eye, and consequently can be represented by a rectangular figure fifty-six units long and six units wide, containing 336 equal colour areas. A new system of charting colour is given by means of horizontal and vertical lines at right angles to one another, the intermediate colour being at an angle of 45°.

In a later section the representation of colours in space of three dimensions is given. Red, yellow, and blue are represented and measured along the three axes of a cube, oranges, greens, and violets then lying on the diagonals of the faces of the cube, and pure neutral tints on the diagonal of the cube. A process of obtaining particular colours by synthesis is described, and numerous examples are given of the composition of different compound colours. It is shown that the red ray of direct light possesses remarkable penetrating power, being distinguishable long after the total absorption of all the other rays. The subject is an interesting one, and those who are engaged upon experiments with colour vision will find Mr. Lovibond's book and apparatus of much importance.

Études de Chirurgie Médullaire. Par A. CHIPAULT, Ancien Interne, Lauréat des Hôpitaux de Paris; Lauréat de l'Académie de Médecine. (Prix Laborie, 1892.) Avec 66 Figures dans le Texte et 2 Planches en Chromolithographie hors Texte. Paris: Félix Alcan, Éditeur. 1894.

THIS volume of 400 large octavo pages is the first instalment of a work on the Surgery of the Spinal Column and Spinal Cord which is to occupy three, or possibly four, such volumes. It is no small task that the writer has undertaken, and he has devoted himself to it with great diligence and care. The volume opens with a very brief historical review of the rise and progress of spinal surgery. Then follows a section in which are described and discussed the various operations on the spinal column and cord. These operations are grouped into those for the purpose of exposing the posterior surface of the spinal cord, those to expose the anterior surface of the cord, and various spinal operations, such as ligature and suture of the vertebræ and puncture of the membranes surrounding the lumbar cord for the relief of intracranial pressure from excess of cerebro-spinal fluid. The operations are clearly described, and their advantage and defects, as well as their applicability to different cases, are impartially discussed.

The conditions that have been treated surgically are then considered, and in this section valuable analytical tables of cases are given, which are very full and complete. For example, under the head of injuries we have tables of 167 cases of laminectomy for fracture of the spine, 8 cases of other cutting operations for dislocation of the spine, 104 cases of operation for gunshot injury of the spine, and 5 cases of operations for other wounds of the spine or spinal cord—making a total of 284 cases in all. Under the heading of vertebral tuberculosis we have a table of 59 cases of operation for spinal caries without paraplegia, 103 cases of laminectomy for spinal caries with paraplegia, and 3 cases of operations other than laminectomy for Pott's disease with paralysis—165 cases in all. The table of tumours of the spine, meninges, and spinal cord which have been treated surgically includes 22 cases, and finally there is a table of 52 cases of various other diseases which have been submitted to surgical treatment. These tables, including 523 cases in all, 60 of which have not before been published, are of course the most valuable part of this volume. They are the great foundation of clinical facts. It is not by a mere numerical summary of such cases that their true lessons are derived. To know the percentage mortality of an operation is only a small matter, particularly in such cases as those considered by Dr. Chipault. The great facts to elicit are the degree to which grave spinal lesions are capable of relief or cure by surgical methods, and the indications by which the suitable cases are to be distinguished from the unsuitable. Having learnt this, the lessening of mortality directly due to operation, happily, is easily attained with our present means. The sad fact is that in so many of the cases the conditions are beyond either cure or relief by existing surgical procedures; we cannot restore the destroyed nervous tissues. We warmly commend this volume to all readers interested in spinal surgery and we hope soon to see the other volumes.

Induction Coils and Coil-making. By F. C. ALLSOP. London: E. & F. N. Spon. 1894.

THERE are many indications that "faradism" as ordinarily used in medicine will before long be, to a large extent,

replaced by sinusoidal currents and currents of a rapidly oscillating character. Still, the medical induction coil for the present holds the ground, and there is no early probability of its being altogether dispensed with. When, therefore, the author of the work under review states in his preface that one of his aims has been to produce a manual which shall be useful to medical men those who are interested in this subject will gladly turn to it for light and leading. The subject is one about which there are many misconceptions and not much useful information forthcoming. There is no one who has not something to learn as to the construction of coils, how to manage them and what to expect from them.

In points of practical construction the information given is full, clear, and seems to be correct; but the chapter specially devoted to medical coils is perhaps somewhat disappointing. Various methods of construction and regulation are described, but the resulting physical changes in the current are scarcely touched upon. In these days the medical man who uses electricity wants to know something more about the currents obtained from coils than that a fine wire in the secondary will give a current of high electro-motive force, or that two or three cells of a certain size will supply sufficient current for the primary. The information wanted is this: given a coil whose primary and secondary have respectively so many turns of wire and so many ohms resistance, if a current of so many ampères or fractions of an ampère at so many volts be passed into such a primary, what will be the volts and milliampères obtained from such a secondary? In short, what is the law of proportion between primary and secondary, what is the efficiency of instruments of different construction, what are the action and rapidity of the contact breaker, and what is the character of the tracing that would represent the coil's alternations? Information of this kind is looked for in vain in Mr. Allsop's book; yet such instruction would be eminently useful and much more appreciated by medical men than, for example, the expression of opinion that a certain coil is "specially suitable for the electric bath and the treatment of the abdomen by faradaisation." In connexion with bath coils we are introduced to a tertiary wire in addition to the usual primary and secondary. There is not, however, any hint as to its use or any reason given for its presence. Possibly a use and a reason are alike difficult to find. Many of the illustrations are good and very useful; but in the case of the medical coil section some are perhaps too suggestive of the trade catalogue. Amateurs who desire to make or repair induction coils will find this book a most useful guide.

Mikroskopie und Chemie am Krankenbett. Leitfaden bei der klinischen Untersuchung und Diagnose. Für Aerzte und Studirende bearbeitet. Von Dr. HERMANN LENHARTZ, Professor an der Universität Leipzig. Mit zahlreichen in den Text gedruckten Abbildungen und drei lithographirten Tafeln. Berlin: Verlag von Julius Springer. 1893. (*Microscopy and Chemistry at the Sick-Bed.* A Guide to Clinical Examination and Diagnosis. For Physicians and Students. By Dr. HERMANN LENHARTZ, Professor at the University of Leipsic. With numerous Illustrations and three Lithographed Plates. Berlin: Julius Springer. 1893.)

PROFESSOR HERMANN LENHARTZ'S clinical microscopy and chemistry, a small work of 290 pages, is one of the best text-books of its class that we have had the opportunity of examining for some time. Strictly limited in its scope to what may be seen and done at the bedside, the book contains information which may be mastered by the youngest medical student, but which when mastered even by the advanced student will place him in a position to benefit both himself and his patient by what can be made out by the bedside examination. The first thing that strikes us in going over the work is the extremely practical nature of the instructions given and the accurate illustrations which accompany the text. The second point that strikes us is the enormous amount of information that has been condensed into handy and accessible form. The book is divided into six sections. The first section treats of the animal and vegetable parasites (the illustrations and descriptions of the various pathogenic vegetable and animal parasites here given are capital). The second section describes the methods of investigating the blood in both health and disease, and in this part Ehrlich's methods and work have been pretty accurately followed and drawn upon, the author acknowledging his indebtedness to Ehrlich for much of the material in this part of the work. The third section deals with the examination of sputum, and even those who have paid some attention to this subject will here find something new and much that is valuable; to many, indeed, this chapter will be the most interesting in the book. The examination of the buccal, gastric, and intestinal discharges is given in another section, of which the part on chemical testing of the contents of the stomach, though brief, is eminently practical. Then follows a section on the examination of the urine, which is exceedingly well brought up to date, and which contains a large amount of information which will be useful not only to students but also to those engaged in active practice. The author concludes the work with a few pages of description of the fluids withdrawn by puncture from different cavities and organs—pus, echinococcus, and hydrocele fluids, hydronephrosis and the like. The work contains sixty drawings, mostly original, and many of them exceedingly typical, whilst at the end of the book are given three very good coloured plates containing eighteen drawings, the first ten of which are illustrative of the bacteria most often met with in clinical work; the eleventh gives the plasmodia found in the blood of malarial patients; the twelfth to the sixteenth include illustrations of the blood in different diseases, whilst the seventeenth and eighteenth show hæmin crystals and pigmented cells in the heart muscle. We have seldom seen a more practical hand-book, and we cordially recommend it to all those engaged either in teaching or studying in the hospitals, and also to those who wish to obtain all the information they can by thorough clinical examination of their cases.

The Art of Living in Australia. By PHILIP E. MUSKETT, late Surgeon to the Sydney Hospital, &c. London: Eyre and Spottiswoode. 1893.

ALTHOUGH this work deals in a general way with life in Australia, yet its principal object, as the author informs us in his preface, is "to bring about some improvement in the extraordinary food-habits at present in vogue—i.e., in Australia. For many years past the fact that our people live in direct opposition to their semi-tropical environment has been constantly before me. As it will be found in the opening portion of the chapter on School Cookery, the consumption of butcher's meat and of tea is enormously in excess of any common-sense requirements, and is paralleled nowhere else in the world. On the other hand, there has been no real attempt to develop our deep-sea fisheries; salads, which are easily within the reach of every home, are conspicuous by their absence; and Australian wine, which should be their national beverage of everyday life, is at table almost a curiosity." The object thus set forth is worthy of all commendation. Every traveller in Australia must be struck by the contrast between the climate of the country and the food customs of the people. With a climate like Sicily or Campania, the food customs are similar to those of Yorkshire or Kent. Our colonial cousins have made practically no effort to adjust themselves to their new environment in the matter of diet. That the results have not been more disastrous is due to the general healthfulness of the climate, the absence of much poverty and privation, and the open-air life pursued by a large proportion of the inhabitants. Mr. Muskett begins by setting

forth the great charm and healthfulness of the Australian climate. His picture, though accurate in the main, is probably rather roseate. He seems to us to exaggerate the equability of the climate and to underrate the unpleasant effects of the hot winds. Then follows a number of chapters on such subjects as baths, bedroom ventilation, clothing &c. These topics are handled in the ordinary way, and without any very close regard to the special necessities of Australian life. The author hurries on rapidly to what is evidently his main topic—viz., diet as it is, and as it ought to be, in Australia. This part of the book is well done, the author setting forth his views with fulness, clearness and pungency. His main point is the great abuse of the heavier nitrogenous foods (especially mutton and beef) in Australia, and the neglect of fish and vegetables. He deplores the absence of any national Australian dish, and trusts, if such a thing should arise, that it will be some species of vegetable curry or salad. He strongly but justly condemns the ordinary Australian notion that butcher's meat should form an integral portion of every meal, and urges the more generous use of fruit, in which he admits that Australia greatly excels. It will thus be seen that Mr. Muskett takes exactly the same view of the errors of Australian diet as does Dr. Murray Gibbes, whose paper we noticed recently,[1] and that he advises the same remedies. The remainder of the book is devoted to the subject of Australian wine, cookery receipts, &c. The style of the work is popular rather than scientific, but perhaps this may not lessen its usefulness.

The Diseases and Disorders of the Ox, with an Account of the Diseases of the Sheep. By GEORGE GRESSWELL, M.A. Oxon., L.R.C.P. & S. Edin. With Additions on Human and Comparative Pathology, by Dr. ALBERT GRESSWELL. Second Edition. London: W. H. Allen and Co. 1894.

WHEN this work appeared a little more than four years ago we had occasion to speak of it in terms of commendation, and in the second edition we find the same good qualities which have led to its favourable reception by those who are particularly interested in the diseases of cattle and sheep. It would have perhaps been better if the work had been condensed in this new edition, for in some parts there is a tendency to wander into philosophical and historical disquisitions which the majority of cattle and sheep owners may not appreciate. In describing the treatment of actinomycosis no mention is made of the almost specific action of potassium iodide in that disease when administered internally, both in animals and mankind. What is described as "navel-ill" in lambs is, we presume, the serious condition due to septic infection, or septic inflammation of the umbilical cord, and which is sometimes so prevalent as to be considered an epizoötic. This is not stated, though the account given of the post-mortem appearances would lead to the inference that the disorder is caused by septic poisoning. These, however, are minor defects which detract but little from the book, and we can only repeat the opinion we gave of the first edition—namely, that to medical men who desire to know something of the disorders of such important animals as the ox and sheep the work can be recommended.

LIBRARY TABLE.

The Dispersal of Shells. By HARRY WALLIS KEW, F.Z.S., with a Preface by ALFRED RUSSEL WALLACE, LL.D., F.R.S. Illustrated. London: Kegan Paul, Trench, Trübner, & Co., Limited. 1893.—This is the seventh-fifth volume of that useful if unequal series "The International Scientific Series," and from more than one point of view it merits general commendation. Mr. Kew's inquiry into the means of dispersal possessed by fresh-water and land mollusca has been thoughtfully, systematically, and accurately conducted, so that, in quoting from the preface, we are happy to endorse the words: "Many books of far greater pretension, even though they should contain descriptions of scores of new species and work out their internal structure with the greatest accuracy, may yet be of less interest to the philosophical naturalist than this unpretending little volume." If we agree with Darwin that the several species of the same genus, though now inhabiting the most distant quarters of the world, must originally have proceeded from the same source, as they are descended from the same progenitor, we find in the dispersal of the mollusca a somewhat sensational puzzle. How does a fresh-water shell get across the globe? How does it traverse such formidable barriers as the salt sea and the arid desert? Mr. Kew's answers are suggestive and not arbitrary—which is to say that he does not dogmatise from what is not proven; but he does place before us an enormous amount of facts, apparently "trifles and accidents in nature's workshop," as Mr. Wallace terms them, from which some conclusions may be drawn now, and more will be drawn later as our knowledge becomes more perfect. This is the sort of book that inspires a reader with real interest in the author's subject.

An Epitome of Patent Law and Practice. By JAMES JOHNSON, Barrister-at-Law, and J. HENRY JOHNSON, Assoc. Inst. C.E. and Solicitor. Second Edition, carefully revised. London: Longmans, Green, and Co., and Stevens and Son.—This handy little book contains an adequate outline of the Law of Patent at the present time, with a clear statement of the procedure on applying for a patent. The nature of patentable inventions, the necessary qualifications for becoming a patentee, and the steps in registration of a grant or in opposition of it are all carefully discussed, while the definitions of, and penalties for, infringements also receive attention. A chapter is devoted to the discussion of foreign patents, which in these days of general straitness at home will be read with interest. The field for enterprise that lies before the foreign patentee is so large that the English inventor who is not satisfied with that afforded him at home should reckon up carefully the countries in which his invention is likely to achieve popularity abroad. The authors point out that it is very usually the fault of the English patentee that he does not reap a foreign harvest, as he is not only in the habit of neglecting the legal requirements of foreign Governments, but as a rule does not take the slightest trouble to secure for his property a due commercial introduction. The legal requirements with respect to foreign patents, which differ from British regulations, are briefly set forth under an alphabetical list of the respective countries. We congratulate the authors on their lucid and practical little treatise.

The Local Government Annual for 1894. London: S. Edgecumbe-Rogers, the *Local Government Journal* Office, Dorset-street, E.C.—This is the third year of publication of this annual and its issue cannot fail to be highly useful to persons engaged in any department or section of local government work. Several improvements appear to have been made in the present volume as compared with its predecessors, and its bulk has necessarily been proportionally increased. One feature may be remarked upon—one, indeed, which is shared by some other publications—namely, the insertion of advertisements in the body of the work. This practice not only gives the book an unsightly aspect but seriously interferes with the continuity of the information which the volume is designed to convey. True, some attempt has apparently been made (not very successfully) to make the subject of these *interne* advertisements accord with the nature of the particular kind of information imparted on the opposite page; but, any way, the arrangement, whilst reflecting credit on the business enterprise of the publisher, can scarcely be regarded as unobjectionable.

[1] THE LANCET, Feb. 3rd, 1894.

THE LANCET.

LONDON: SATURDAY, MARCH 3, 1894.

THE judgment of the Supreme Court of Appeal in the case of Allinson *v.* the General Council of Medical Education and Registration has now been delivered. The court consisted of the Master of the Rolls (Lord ESHER), Lord Justice LOPES, and Lord Justice DAVEY. The importance of the judgment of such a court need not be insisted on, whether we have regard to the authority of the individual judges or to the fact that they were sitting as a Court of Appeal. The judges were unanimous in their conclusions. The particulars of the case of Mr. ALLINSON will, in the main be remembered by the readers of THE LANCET. He, being a registered medical practitioner and Licentiate of the Royal Colleges of Physicians and Surgeons of Edinburgh, was charged before the General Medical Council in May, 1892, with systematically seeking to attract practice by a system of extensive public advertisements containing his name, address, and qualifications, and invitations to persons in need of medical aid to consult him professionally, the advertisements so systematically published by him being themselves of a character discreditable to a professional medical man. The public placards in which Mr. ALLINSON was advertised on the great hoardings of London must still be vividly in the recollection of members of the profession. He edited the medical columns of the *Weekly Times and Echo*, and in giving advice to all and sundry in those columns he was not content with advertising his own wares, but indulged in wholesale disparagement of his fellow practitioners as "drug doctors" who were little better than poisoners. One of the gems of his advertising literature was to speak of the regular practitioners of medicine as "the ranks of professional poisoners." To one who wished to avoid vaccination (enjoined, be it remembered, by Act of Parliament) he wrote in the *Weekly Times and Echo*: "To know how to avoid vaccination, write Mrs. YOUNG, 77, Atlantic-road, Brixton, London, S.W. Do not have baby vaccinated until you are actually summoned; then write me and I will give you the name of a doctor who vaccinates only in one place and with calf lymph." We need not further refresh the memory of our readers with specimens of Mr. ALLINSON'S style of attracting practice. His conduct was at length, as we have said, brought to the notice of the General Medical Council by the Medical Defence Union, with the result that, after a most careful inquiry, that Council found Mr. ALLINSON guilty of infamous conduct in a professional respect and ordered his name to be erased from the Medical Register. We should have thought that, with Mr. ALLINSON'S opinion of medical men, he would only have been too pleased to withdraw his name from the list of the corporations whose diploma he held and from the great register of the profession kept by the General Medical Council. But this was not the case. Before leaving the council-room Mr. ALLINSON asked when he could apply to have his name replaced on the Register, and ever since the action of the Council he has been seeking to induce the courts of law to order its replacement. All these attempts have failed, as might have been anticipated.

The case was first tried before Mr. Justice COLLINS, who gave judgment for the defendants without calling on the defendants' counsel. Mr. ALLINSON then carried his case to the Court of Appeal, whose judgment is now before us. He asked the Court to declare that the decision of the defendants (the General Medical Council) directing the erasure of his name was invalid and void, for an injunction to restrain the defendants from erasing his name or allowing the same to remain erased from the Medical Register and from publishing such erasure, and for a mandamus to compel the defendants to restore his name to the Register. The grounds on which Mr. ALLINSON based his appeal were, as in the action before Mr. Justice COLLINS, that Dr. PHILIPSON had been both accuser and judge, and that he (the plaintiff) had been condemned for a particular form of procedure. The Master of the Rolls had no difficulty in determining that Dr. PHILIPSON had resigned his connexion with the Medical Defence Union on the day that he was appointed to represent the University of Durham in the General Medical Council, and that, in point of fact, he had taken no part in the action of the Union against the plaintiff. Under these circumstances Dr. PHILIPSON could not reasonably be suspected of bias, and the contention that he was prejudiced failed. It is the second point in the plaintiff's argument that is of most interest to the profession—viz., that there was no evidence that he had been guilty of infamous conduct in a professional respect—in other words, that his wholesale advertising of himself and his wholesale disparagement of the ways of his professional brethren were not infamous in a professional respect. We have no time to discuss the peculiar frame of mind of a gentleman which allows him—without any personal malice, as he tells us—to erect himself and his methods on the basis of a wholesale libel of his profession; but we hasten to remark on the judgment of the court as being indeed one in the line of all previous judgments on similar questions, but distinctly affirming the right and duty of the Council to pronounce judgment in respect of an offence which it had not explicitly pronounced judgment on till Mr. ALLINSON'S case arose. In the PARTRIDGE case the practice of advertising was, indeed, involved; but the *gravamen* of Mr. PARTRIDGE'S offence was that he advertised after promising *not* to do so. In this case the advertising was not such a distinct breach of the by-laws of the corporations concerned, though in the estimation of the General Medical Council, which has been entirely justified by the judgment of the Court of Appeal, it was a breach of all professional rule and conduct. Our readers will see how emphatically in this as in the PARTRIDGE case the judges support the judgment of the Medical Council. The judgment of the court was based on a most important definition prepared by Lord Justice LOPES and adopted by the Master of the Rolls and Lord Justice DAVEY—not, indeed, as exhaustive, but as applicable to this case. We venture to think that the definition will be acceptable to all reasonable members of the profession and will be found to have a very wide application. It will help to clear the way for the action of the Council in many difficult circumstances

and questions. It supplies a principle of guidance on which to form an estimate of what constitutes infamous conduct in a professional respect. The definition includes anything done by a medical man in pursuit of his profession which would be regarded as infamous by his professional brethren of repute. Any such thing would be evidence of infamous conduct in a professional respect. There are two things to notice in this attempt of the Court to define for themselves what the General Medical Council would be justified in regarding as infamous conduct in a professional respect. First, it recognises that a *medical* man may not do many things that another man may do. The profession has its code of morals and has it as much in the interest of the public as in that of its own members, from whom so much is exacted and expected. Secondly, the test of conduct is the judgment of men of repute in the profession. We are not to square our actions by the procedures and opinions of the lowest members of the body, but by the procedures and opinions of men of repute. The definition will greatly fortify the General Medical Council and the medical corporations in holding up the standard of professional conduct, and it will fortify individual medical men in endeavouring in their methods of practice to do the same. If Mr. ALLINSON had paid the slightest regard to what men of repute in his own profession, in his own neighbourhood or in any other neighbourhood, or in any division of the kingdom, thought and held, he would not have been in the position in which he now finds himself. We can only hope that the suggestion of the judges that the ultimate estimate of professional conduct should turn on the judgment of "men of repute" in the profession will tend to save many practitioners from adopting courses of procedure which cannot ultimately benefit either themselves or the public.

INTEREST in the sanitary condition of our factories and workshops is steadily on the increase. This is apparent from the reports which have recently been presented to the Labour Commission, the perusal of which has created some anxiety on the part of those who have to deal officially or otherwise with the question. It is gratifying, therefore, to find that in reply to a resolution passed by the Association of Certifying Surgeons and forwarded to the Home Secretary by Her Majesty's Chief Inspector of Factories, the Secretary of State gives expression to the pleasure with which he notes the interest taken by the certifying surgeons in the amelioration of the sanitary conditions of some of the textile factories in Lancashire and Yorkshire, and their desire to coöperate with the Home Office in any measures adopted to attain this object. The view of the certifying surgeons is expressed in this resolution. They are conscious enough of the difficulties of carrying out any complete supervision of factories and workshops with the present limited number of inspectors, and they have notified their willingness to undertake the duty of reporting upon the condition of those which they in their daily work are constantly visiting.

The subject is one of vast importance not only to our industrial population but to the general public. Notwithstanding the passing of the Factory and Workshops Act many of the places of which the Act takes cognisance are in a condition of sanitary unfitness resulting it may be from foul emanations produced by manufacturing processes, and not immediately to be removed. There are nuisances also in many instances arising from defective sanitary conditions. The certifying surgeons are fully aware of the dangers which exist, and it is no matter for wonder at that they expose the need for more sanitary inspectors and for more complete inspection. This necessity was most forcibly placed before the Home Secretary by a large and influential deputation which waited on him on the 15th ult. In his reply to the deputation the Home Secretary stated that he would "see whether he could make some proposal which would secure a reasonable system of inspection of those very dangerous operations." It is an economic duty of the public to use every available precaution in protecting the health of the producers and to make certain that the articles produced for consumption shall be manufactured under the best possible sanitary surroundings. Cases of infectious disease have been found under the same roof as the "workshop," and in some instances patients suffering from zymotics have been nursed in the workroom. Instances of this kind demonstrate the necessity for complete and perfect inspection, as the textures may readily become vehicles of infection and propagators of disease. Under Section 101 of the Factory and Workshops Act, 1878, the supervision of the sanitary state of mills, factories, and workshops was placed under the care of the Factory Department of the Home Office, but the limited number of inspectors rendered it impossible for them to carry out their duties in a manner as complete as might have been desirable. The last public returns show that the inspectors were only able to make 114,274 visits in one year to 134,088 factories and workshops. It thus appears that 19,814 workplaces remained unvisited. An attempt was made to improve this state of matters by handing over the sanitary supervision of the workshops to the local sanitary authorities. Whether, however, the appointment of inspectors by local authorities removable at pleasure is likely to conduce to efficient supervision is a matter of some doubt. The Home Secretary has taken one step in the right direction by increasing the number of factory inspectors who hold their appointments directly from the Home Office, and who are thereby rendered quite independent of local authorities. The entire existing staff, however, is too small for the work of efficient inspection, and in many cases it appears that the sanitary aspect of their duties is neglected for the purpose of carrying out the safety clauses of the Acts, or of investigating cases relating to the hours of labour. This is admittedly an evil.

The Home Secretary in dealing with questions of sanitary science in its relation to the inspection of workshops and mills might do worse than accept the proffered coöperation of the certifying surgeons under the Factories Act. They have been appointed by the Chief Inspector of Factories, and are thus already members of the factory department, a circumstance which would tend to minimise the risk of friction with existing inspectors. They would also be beyond the power of local authorities—a fact which would afford some guarantee that the duties would be carried out in a manner unbiased by local prejudices. Further, being medical men practising in the districts to which they are certifying surgeons, they would be more likely to command the confidence of the workpeople, more likely to hear

complaints about nuisances. And finally, inasmuch as a portion of their duty at the present time is to visit most of the factories, it would be a comparatively easy matter for them to take note of the sanitary and health conditions of the buildings and make report thereupon to the higher authorities. Amid the outcry for more efficient inspection it appears to us that there is here a considerable amount of available scientific energy allowed to remain disused, which, if properly organised, would greatly add to the effectiveness of the Factory and Workshops Acts.

WE dwelt lately on the many-sidedness of Professor BILLROTH as shown by his attainments in the artistic and literary sphere, and by the many accomplishments which he succeeded in acquiring in spite of his vast and unwearied labours in surgery and pathology. On the other hand, we remember the late Sir ANDREW CLARK saying on one occasion that "medical science is a jealous mistress, who only extends her highest favours to those who yield her an exclusive devotion." These two methods of life represent two currents of thought which are always potent, and, although contrasted, are not necessarily opposed. The one is that of the professional expert, who revels in his chosen life-work, who lives for the purpose of rendering himself ever more and more proficient in it, and who finds in it an adequate satisfaction of his tastes and ambitions. The other is that of the all-round man of culture, who gives his chief time and energy to one department of human activity, but who sympathises with all departments and strives to obtain a many-sided development of all his faculties and powers.

In favour of professional exclusiveness much may be said. It is a notorious fact that all the great professions tend to exclusiveness — that the "parson" tends to be always a "parson," the "lawyer" always a "lawyer," the "doctor" always a "doctor." To find an individual at once a first-rate expert and an accomplished man of the world, though not impossible, is admittedly difficult. A profession tends to develop exclusiveness chiefly because its subject matter is difficult and sufficient to absorb the energies of the average man. Divinity, law, and medicine range over wide fields of human thought and practice, and adequate knowledge of any one of the three is not obtained without a single-minded devotion to the end in view. Especially is this true of medical science. Every year its range is extending and its ramifications becoming more widespread. Touching physics, on the one side, and psychology on the other, biological questions are among the most abstruse and multiform that can engage thought. The medical student of to-day cannot be content with a knowledge of anatomy, physiology, medicine, surgery, obstetrics, and materia medica. Comparative anatomy and embryology invite him to the contemplation of a thousand marvellous facts which throw light on his life-work. Electricity lures him on with phenomena suggesting analogies with those of life. Psychology asserts her claim to a hearing when he essays an explanation of the phenomena of hypnotism or psychotherapeutics. With such fields claiming his attention it would be no ground for wonder if the student of medicine felt constrained to abide within such almost unlimited limits. Again, a profession favours exclusiveness, not only because its subject matter is difficult and various, but because it demands a high degree of efficiency on the part of those who aspire to practise it. It is instinctively felt that a professional opinion, unless it be the fruit of much thought, wide reading, or long experience, is worse than useless. The professional man must excel, or else forfeit all real influence and respect. Hence arises another and potent motive for concentration of labour and effort on the special life work of the individual.

If these arguments fairly exhausted the subject we might feel that one-sidedness and not many-sidedness was the true ideal for the student and practitioner of medicine; but there are other sides to the question. First of all, the exceptionally gifted individual, the man of unusual intellect and energy, often scorns any limitations to his activities, which overflow into a multitude of side channels and minor outlets. So far from being the worse for this apparent dissipation of energy, the man of superior powers is all the saner and happier for it. But it is more important to notice that the highest form of excellence in any particular field is not always, perhaps not usually, attained by the mere specialist. The great artist is all the greater master of his chisel or his brush by having his mind imbued with history, the record of human action or poetry, the record of human passion. If RAPHAEL had known nothing of divinity or philosophy we should not have had the "Disputa" or "The School of Athens." If MICHAEL ANGELO had never studied anatomy there would have been no "Moses" and no "Last Judgment." There is probably something morbid, something analogous to physical hypertrophy, in the exclusive development of one faculty or set of faculties to the neglect of the rest. Our readers will remember the often-quoted remark of DARWIN that he deeply regretted having neglected the cultivation of his æsthetic emotions by music and poetry, as he found in old age that he had thus caused the atrophy of faculties necessary to happiness. Labour bestowed on one faculty is not fruitless as regards other faculties. There is such a thing as a healthy balance of mind which is probably one of the most indispensable preliminary conditions of many of the highest forms of excellence. A third and, we think, one of the strongest arguments for a diversity of intellectual activities is the relief of tension which is thereby obtained. Distraction and amusement, like rest, are indispensable to all workers, and the scientific student who finds relaxation in artistic and literary pursuits, so far from impairing his working powers, is really strengthening them; but he must shun the snare of frittering away his energies upon a host of dissimilar aims. There must be one main current of activity, to which all the others are held subsidiary. BILLROTH spent hours at the piano or in conversation upon artistic topics, but he never wavered in his life-long devotion to surgical science. Lastly, diversity of talent and accomplishment attains a high importance when we contemplate it rather from the social, than the professional, point of view. The mere specialist, no matter how eminent, is often an unmitigated bore. Talking "shop" is the most wearisome of all abuses of what should be the noble art of conversation. We owe it to our fellows not only to perform our own life-work well (this is

the first duty of all rational creatures), but afterwards to sink our own personality, to enter into the tastes and habits of thought of other people, to touch life at many points, and to fulfil the varied and multiform functions of civilised life.

THE Rev. H. R. HAWEIS, to whose authority we bow on matters clearly within his own knowledge, resembles a good many other people in being too prone to give opinions concerning subjects with which he is not intimately acquainted. Unfortunately, his dicta in connexion with the proposed British Institute of Preventive Medicine have been taken up and repeated by a number of people equally unqualified to speak authoritatively. In the *Daily News* of Monday, Feb. 26th, we find a column devoted to statements which afford evidence of well-meaning sentiment, but which are seriously erroneous. It is curious to notice how most of the writers harp on one set of ideas. If Mr. HAWEIS is not answerable for them all, there is a suggestion of concerted action amongst those who are responsible for penning the letters. Certain statements have evidently been agreed upon and each writer has given his or her own version of them. In the first of these epistles the new Institute of Preventive Medicine is spoken of as being "merely the offspring of a few physiologists and for which there has been no public demand." The influential deputation that waited upon Sir MICHAEL HICKS BEACH some time ago affords quite sufficient evidence on which to base a flat contradiction to this statement. Then comes a statement in which these signatories arrogate to themselves the right not only to decide on points of ethics, but also to give advice to the medical officer of health as to what may be and what may not be dangerous to the health of the local community; they say that "we claim that we and our fellow residents should have the right of veto over it (the institution) as a public nuisance, dangerous to health, and involving animal suffering." Another writer, who apparently should know better, unburdens himself "under three headings," the first of which is incorrect, the second of which is a curious mixture of selfishness and bathos, and the third of which, if the letters appended to a name signify mental training and scientific attainment, the writer ought to know to be absolutely incorrect. The first proposition is that "one of its chief features will be the torture of innocent victims for scientific purposes." That experiments will be carried on in the British Institute of Preventive Medicine as a licensed laboratory under the Act, should those who are responsible for the granting of the licence see fit to give the necessary permission, is, of course, accepted by everyone. That only a very small proportion of these animals will suffer in the slightest degree everyone who has taken the trouble to watch a series of experiments—such as those that are carried on in the Pasteur Institute—very well knows. The amount of ignorance displayed on these matters can only be wilful, and in so far as it is wilful its propagation is culpable and cowardly. The statement that "germ tubes" capable of producing disease were flung out of the Pasteur Institute is similarly unjust. The author of this statement does not say where they were flung to, and though, from an intimate knowledge of the workings of such institutes, we are prepared to affirm that the statement is absolutely incorrect, we should like to point out that it would be almost impossible for even an expert thrower to send a tube from the building near the Rue Dutôl into the street. Tubes used in bacteriological research are carefully kept under personal supervision whilst they are being used. When they are no longer required they are filled with antiseptic fluids or carefully sterilised by steam. Everything else on which the smallest trace of infective material has found its way is at once treated with similar antiseptic fluids, or is burned in a stove specially set apart for the purpose.

The next plea which is set forth by three or four of the other writers is that "it" (the presence of this new institute) "must affect the value of house property in the neighbourhood, because there are, happily, many who will find it difficult to sleep in the consciousness that within a few hundred yards innocent victims were suffering during the long hours of the night an intensity of agony which the mind of man cannot conceive." A lady writer, following this up, says: "I allude to the mental suffering caused to many noble and humane persons by the knowledge of the terrible cruelties perpetrated upon defenceless animals in the name of science. Who gave our medical and scientific men the right to inflict mental agony upon so many of their fellow creatures, simply that their morbid thirst for knowledge might be satisfied?" We commend this sentence to Mr. HAWEIS and to the writer who puts forward his statements in categorical order. The following is also worthy their consideration: "I write now to say that to me life will be rendered much sadder than it already is if another place of torture for innocent and unoffending animals is built." We can sympathise with these two writers whose feelings are being so cruelly played upon by their so-called anti-vivisectionist colleagues. The last statement made by the categorical gentleman runs as follows: "As it will be a manufactory of disease germs for experimental purposes there must be some danger of its acting as a centre of infection; and, however great may be the care taken to diminish the risk, I would ask how can that risk of infection be less than that which attends residence near a hospital devoted to a single infectious disease, instead of some hundreds, and where equal care is taken?" The writer assumes in the first instance that there is danger to be anticipated by those who live in the neighbourhood of hospitals for infectious diseases. With regard to the statement itself, except in the case of small-pox hospitals, there is not one atom of fact on which to support it. Indeed, the whole evidence goes to prove that a scarlet fever hospital for instance, placed in any district, diminishes the number of deaths in that district from the very fact that patients may be isolated so readily; whilst it has never been found possible to trace any cases of disease directly to infection from the hospital itself.

In the case of the British Institute for Preventive Medicine there can be no danger to those outside the institution unless through the infection of one of those working in the institution. These cases of accidental infection are of very rare occurrence, and with one or two exceptions it has never been proved that they have arisen in connexion with work carried on in such an institution, the evidence pointing rather to the fact that they have had their origin in the usual manner. Fads which depend upon cheap advertisement for support may safely be left to themselves. It is, however,

necessary to issue a word of warning and advice when the interests of a great and beneficent institution are attacked, and errors circulated which may mislead those who are not careful to inquire for themselves into their truth and relevancy.

THE volume which has just been issued by the Royal Commission on Vaccination has an especial interest for the reason that it gives an excellent insight into the grounds which have been found sufficient by anti-vaccinationists for their objection to vaccination. In some cases the witness had seen an ulcerated arm, possibly the result of the operation, and from that moment every misfortune to the health of any child who had been vaccinated was attributed to the vaccination. We are almost taken back to the old Jennerian days, and reminded of the expectations of those whose antipathy to vaccination was thus early manifested. Expectations of the growth of horns and tail on the vaccinated person and the production of bovine monsters by parturient women who had been vaccinated have been replaced by errors and superstitions which appeal to some minds with considerable force. Thus we find a late chairman of a board of guardians including among the list of injuries attributed to vaccination the imbecility of a child, the mother having declared her belief that that was the cause. Sore and weak eyes and skin eruptions—any malady, in fact, occurring in after life—are thought to be the result of the operation, and necessarily no knowledge of any useful kind has been employed to distinguish between conditions which in very exceptional cases have been found to result from and those which can have no possible connexion with vaccination. Had it been possible to take these same witnesses through the wards of a small-pox hospital, and so enable them to see how differently this disease manifests itself in the vaccinated and unvaccinated, there is no doubt that a corrective for many of these impressions would have been furnished. Regrettable as are the rare and occasional cases of ulcerated arm and erysipelas, these have to be considered in connexion with the occurrence of so fatal and loathsome a disease as small-pox, which, but for vaccination, would attack large proportions of the population, often leaving among those that recover a permanent injury.

With evidence of this kind we have that submitted by Professor CROOKSHANK, who tells the Commission that he believes that any effect which cow-pox has upon small-pox, "if such exist at all, is a very *transient antagonism* and not a specific protection," and who puts on one side as fallacious the vast amount of experience available to show that the protection against small-pox afforded by vaccination stands in relation to the thoroughness of the vaccination. The observations of MARSON, GAYTON, and COLLIE, and the records of workers in small-pox hospitals are to be deemed nothing more "than a very convenient mode of explaining away outbreaks of small-pox which occur in spite of vaccination." Professor CROOKSHANK is influenced by his "experimental experience," and when asked, "Would you tell the Commission what you mean by experimental experience?" he answered, "A knowledge of viruses, such as the experimental vaccination of calves. If you vaccinate a calf in one place, provided that one place takes, you have the same protection as would be afforded by sixty."

It is difficult to understand how it can have been overlooked that the real question at issue is whether the duration of protection afforded by the one and the sixty places of inoculation is the same. Professor CROOKSHANK refers to the experience of the Lamb's Conduit Institution in support of his contention that one and sixty places are equally protective, apparently forgetful of the fact that any such observation is subject to the explanation that the calves remain in the animal vaccine station only a limited number of days and the duration of protection of the calves must be unknown. The evidence published in the volume shows that the difficulty that really has to be met is the readiness with which well-intentioned people can be misled. Perhaps one thought impresses the reader more than any other in studying the volume which has been issued. If one tithe of the pains had been taken to make known the risks of small-pox and the value of vaccination that have been expended on endeavours to prejudice the public against vaccination it is not probable that the appointment of a commission of inquiry would ever have been deemed necessary.

Annotations.

"Ne quid nimis."

QUEEN VICTORIA AND "OUR LADY OF FLOWERS."

IN spite of something like a civil war in the southern provinces and an anarchist outbreak in those of the centre and north, Italy will not lose this year the presence of her most august and welcome guest. By the middle of the month Queen Victoria will pay her annual visit to "Our Lady of Flowers," and will be received with the hospitality, and more than the hospitality, shown her on previous occasions. Troubles at home and what diplomatists call "friction" abroad make the Italians peculiarly sensitive just at present to the attitude of old friends towards them, and the steady countenance vouchsafed through good report and bad by the British Queen and her subjects sends a reassuring, if not a self-complacent, thrill throughout the peninsula. Enemies without, and even in her own household, have represented Italy to be at this juncture in the worst position to receive foreign guests, particularly of so imperial a type as Her Britannic Majesty the Empress of India. Impecuniosity, it is said, has laid its paralysing hand on all her public interests, to the serious prejudice of sanitation even in such civilised centres as Florence. The spectre of typhoid fever and other infective maladies is conjured up as a deterrent to the visitor from abroad; and in the case of Florence the scare is artificially fostered by interested rivals among her sister resorts. All this hollow clamour is quietly suppressed by the visit of the Queen to the Villa Fabbricotti (near her former residence, the Villa Palmieri) and by the concurrent or consecutive arrival of other high-placed personages in the city and its environs. The truth is that Florence has seldom had a healthier winter or promise of a healthier spring than this year. The reforms by which she is being put above reproach in sanitary matters are considerably more advanced than when the Queen was last within her bounds—a circumstance which has gratifying confirmation in the lowered sick rate and mortality. True, there has been not a little influenza prevailing, but even at its height it never assumed anything like

the severe form it manifested north of the Alps. How judiciously Her Majesty has been advised as to the hygienic condition of the Tuscan capital the profession will have an opportunity of judging during her residence at the Villa Fabbricotti. That sojourn will cover the time of the International Medical Congress, and many an accomplished physician and sanitarian on his way to or from that mighty gathering will be tempted to linger a while in Italy's "Modern Athens." He will then see for himself what has at frequent intervals been recorded in these columns that among Italian cities Florence is to be preferred even to Rome in her sanitary system, as she certainly is in her health statistics. Indeed, few continental capitals can boast, like her, of a monthly death-rate of little over 17 or 18 per 1000—and that, moreover, during months when infective disease is most rife. These facts should obtain even greater publicity than has yet been accorded them. Florence would do well to follow the example of Munich, and by diagrams of her drainage system and water-supply, as well as by illustrative statistics, bring her sanitary condition under the notice of the medical world at the Exposition attached to the Congress. The Bavarian capital justifies this procedure because of the prejudices prevailing in other countries as to its salubrity and even safety as a residence. Her Tuscan sister might similarly silence the reports put about to her discredit, though, it is true, she has *par excellence* "a friend at court" in the steady favour she enjoys with Her Majesty Queen Victoria.

BILLROTH'S "LIFE AND LETTERS."

"MAN is a part of collective nature; his development proceeds not by leaps and bounds, but slowly out of past and present." The effect of the individual on society depends on his progenitors as well as on the circumstances into which he was born and in which he has grown up. These form the character, and out of it develop the deeds of the man: "Und was man ist, das blieb man Andern schuldig" (And what one is, for that he remains indebted to others.—Goethe's "Tasso.") These are the closing words of the brief autobiography which the great surgeon penned with his own hand in June, 1880, and bequeathed to the Royal and Imperial Society of Physicians in Vienna. The autobiography itself appears in a "Billroth Nummer" of the *Wiener Klinische Wochenschrift* and presents the narrative of a career in which the distinctive notes are humanity, power, and modesty. The last-named quality had, in Billroth's case, its origin in the first. It was his keen sense of kinship and brotherhood to his fellow-man, and of the obligations, consciously and unconsciously contracted from that universal family tie, that made him minimise what he had contributed of his own—made him, in fact, sink self in humanity. A life of which this was the inspiring principle, *a fortiori* a life stamped at each "new departure" with the impress of power, cannot but be a precious heirloom, and sufficiently explains the delight with which the world looks forward to its worthy portrayal and speedy publication in book form. The autobiography, it will be seen, concludes abruptly with the midsummer of 1880; but Billroth lived nearly fourteen years onger and these contain his ripest and richest work. Material for this supplementary period will be even more abundant than for the earlier, not only from the increased fame and from the enlarged relationships with the world of science, literature and art which it brought, but from the epistolary correspondence of a private kind in which that period was prolific—correspondence in which the beautiful nature of the man emerges more clearly than even in his public appearances. Many a thought and many an act for which mankind will feel the richer in precept and example will then for the first time see the light, completing the picture of a personality known but in general outlines and broad details. Down to within sight of death his letters bear the imprint of his keen intelligence and humanitarian spirit. One dated as near his end as Jan. 20th, 1894, and written from his residence at Abbazia on the Adriatic, is especially characteristic. This, addressed to a friend in Vienna, first apologises in a strain of "humorous melancholy" for any failings of temper he may have shown in act or expression, "for," he says, "after well-nigh seven weeks of insomnia one is no longer quite master of oneself." Then follows a brightly written account of his symptoms and of how he gets through the day. "If the weather is cloudy, as at present under a scirocco wind which comes soothingly (like a poultice) to the bronchi, I bask at open windows and keep my room all day, listless in an armchair. Intellectual exertion is not to be spoken of. I drop asleep after reading one page, and it is all the same whether the book be a dull novel, a historical work, or Helmholtz himself! ..... The joy of my life is the outlook on the sea, on the islands, on the sky, on the laurel-groves, all day long the dear sun shines into my room and into my heart. Then I am happy. You know, of course, the beautiful academic homily of H. Grimm (I often met the old gentleman in Berlin, in the Thiergarten), a homily on old age, a pendant to the 'De Senectute' of Cicero. Everything that Grimm says there corresponds completely to what I feel. The world of humanity sinks so gradually under our feet, we see earth and heaven with us, next us, below us, over us, *allüberall*; we yet feel ourselves part of nature, like cliff and wood, like storm and blue sky, distributed into the All—feel thereby as *Gesammtnatur* (collective nature), not as a detached piece of the universe, but as the collective whole itself. The All I have here within me and have no need of men." From this Wordsworthian, almost mystic, digression, he passes to his old age. "Socin (the well-known surgeon of Bâle) said once very well: 'Years don't determine our age, but the state of our arteries does.' Manfred again thinks it is not time that makes us old, but what we have lived to see in it. So there are young old men and old youths. Yet how diverse is the etiological perception even in this domain! Have you read yet the first two parts of Theodor Gomperz's 'Griechischen Denkern' (Greek thinkers)? If not, then take them with you on your next journey. It will be one of the finest books of the last quarter of our century, written grandly but gracefully withal." The reader will remark how the references to his feeling of oneness with universal being contained in the above letter correspond to the closing words of the autobiography, written in June, 1880, and how to the end his all-embracing humanity beats true to the same note.

"Servetur ad imum
Qualis ab incepto processerit et sibi constet."

Such was Billroth as he appeared to all who enjoyed his intimacy or came even into occasional contact with him. Such he will be shown to the world in that portrayal of his life and selection from his correspondence which it is hoped will be given to the public before the lapse of the present year.

LONDON BAKEHOUSES.

THE sanitation of places where food is stored and prepared was the subject of a paper read recently before the Sanitary Institute by Dr. F. Waldo, the medical officer of health of the parish of St. George the Martyr. The condition of bakehouses in this district had already been brought before the Vestry by Dr. Waldo in a special report, on which we have already commented. It was, therefore, obviously convenient that the sanitary requirements of bakehouses should be discussed at the Parkes Museum, where those familiar with the difficulties against which journeyman bakers have to contend could discuss the subject. Dr. Waldo in his paper described the actual condition of a bakehouse as

he found it. He took as his example one that was especially wanting in every reasonable requirement, and later proceeded to discuss the law relating to bakehouses and to suggest amendments. Among these suggestions he included the annual licensing of the premises by the London County Council, the regulation of the conduct of the business and the structure of new premises by by-laws to be made by the council and enforced by the sanitary authorities; the prohibition of the use of any place as a bakehouse which is almost or altogether below the street level unless previously occupied before a specified date. The proposals are undoubtedly comprehensive, and the question which has to be considered is whether they are necessary and practicable. On the ground of necessity, it may be urged that there are probably a number of bakehouses in London that are unfit and never can be made fit for the purpose for which they are used. Parliament has, however, provided the means by which a magistrate may, at the instance of a sanitary authority, inflict penalties of £2 and £5 upon anyone using as a retail bakehouse premises which are unfit for the purpose. This law has been in existence for ten years, and it may not unreasonably be asked how it is, after this interval of time, such premises still remain in occupation. Probably the reason is that difficulty is found in raising a standard that is already too low in London. Bakehouses can be newly constructed which are themselves faulty, and hence there is no standard by which to judge those of older date. This, indeed, is the *crux* of the whole question. It is obvious that there would be no practical difficulty in requiring that premises not previously occupied should have ample light and ventilation, and by degrees accustoming the trade and the public to conditions very different from those which are often to be found. If this were carried into effect we do not think that the system of licensing would be necessary. Dr. Waldo himself feels the impossibility of applying by-laws as to the structure of premises to those which are in occupation before any such new requirements would come into operation. They must, in fact, be left to the application of the general law which has been in existence since the year 1883. There is, therefore, except in the point of annual licensing, so far no material difference between Dr. Waldo's views and our own. The proposal to prohibit the use of premises entirely or wholly below the ground level is, we think, impossible in view of the fact that bakehouses satisfactory in every respect might be constructed in this position. What Dr. Waldo aims at might be obtained by requiring sufficient opportunity for ventilation and light. This would probably be regarded by Parliament as a reasonable demand, and it would lead eventually to the replacement of faulty premises by bakehouses properly constructed. The demand that the conduct of the business should be regulated is not one which we believe could be easily maintained. While we are glad to see attention drawn to the need for improved bakehouses, we cannot fail to recognise that there is not less want for the London sanitary authorities to enforce improved conditions in other kinds of workshops. So far as the workers are concerned the necessity for active administration is not less urgent, and we would fain hope that while attention is drawn to the conditions under which the baker is employed the tailor and the sempstress will not be forgotten.

A HOLIDAY TRIP TO GRINDELWALD.

FOR one or two seasons past a pleasure trip has been made in the summer months by a body of ladies and gentlemen to Lucerne or Grindelwald, two of the most beautiful spots in Switzerland. These visits have been rendered extremely pleasant as well as healthful by the circumstance that the visitors have not only enjoyed the magnificent mountain scenery around them and taken an active part in the excursions, but have varied their entertainment by holding evening meetings at which they have listened to addresses and taken part in discussions on various subjects affecting the best interests of humanity. It has now been determined by the supporters of this movement that in the coming autumn they will extend their efforts by inducing a large number of young people to go in groups or parties, leaving London every Tuesday or Friday, from June 19th to Sept. 14th, and offering each group a twelve days' holiday for £6 10*s.* per head, to include a return ticket from London (with first-class boat) and full hotel accommodation. The session, if we may so call it, is to be opened by an address from Sir Benjamin W. Richardson, M.D., F.R.S., on How to Make the Most of Life; and he will be followed in due course by Sir Robert Ball, F.R.S., the well-known astronomer, Mr. Edmund Gosse, Mr. Harry How, Mr. Edward Whymper, Miss Friederichs, the Rev. C. A. Barry, the Rev. Hugh Price Hughes, and Mr. W. J. Dawson. Mrs. Fenwick Miller will also deliver an address on America and the Americans; and these addresses, with concerts, in which Mrs. Mary Davies, the Misses Tulloch and others will take part, promise to make the holiday one of great mental as well as physical benefit. As a healthy recreation for a large number of hard-working young people, immured for the greater part of the year in town life, this is a new departure of a kind to which we heartily wish every success.

THE TREATMENT OF RABIES.

THE reissue of a pamphlet by "Beth Gêlert," originally inserted in *The Times* as an advertisement, is taken as the opportunity of giving to the public the following statements, which are put forward as "undeniable facts." It may be well to point out that most of these undeniable facts have been proved to be erroneous, and that as a result of Pasteur's investigations very definite information has been obtained as to the nature of hydrophobia and the means of diagnosing the disease. The first of these undeniable facts is "that rabies is a very rare disease and other diseases are mistaken for it, dogs being thought mad when they are not mad." There is just sufficient truth in this to make it a dangerous doctrine to preach; but when the statistics of the Pasteur Institute are consulted, the fallacy of the first part of the statement at once becomes apparent, whilst as regards the latter portion, experiments on animals, against which the writer is railing, have proved the best means of distinguishing the true from the false cases, and thus of relieving the mental suffering of a very large number of patients. The second statement, "that of all the persons bitten by a really mad dog, very few become affected with hydrophobia, even when no remedy at all is applied," must also be very cautiously received. No doubt when patients are bitten through their boots or through clothes and have merely scratches on the limbs this may be the case, but where the uncovered skin is broken, and especially when the wounds are on the face, the mortality is very great indeed. The third, fourth and fifth propositions all deal with the question of the efficacy of lunar caustic (nitrate of silver) and are merely assumptions; whilst the fourth statement, "that lunar caustic properly applied, even when days have elapsed since the bite, is a certain preventative of hydrophobia," is in direct contradiction to the results that have been obtained by all who have worked at this subject in recent years—since the diagnosis of rabies became more certain. The statistics of the Pasteur Institute are, alone, sufficient to disprove these statements—in fact, the statements themselves contain their own disproof: for if all the patients who go to the Pasteur Institute for treatment have been already cauterised in every year the statistics have been published, and if the Pasteur treatment has had nothing to do with the results,

the proportion of deaths should remain very much the same each succeeding year; whilst we know as a fact that the death-rate has fallen very considerably since the introduction of Pasteur's method. If cauterising were the potent agent in preventing the development of hydrophobia a reversal of this ratio would have been expected, for as the Pasteur treatment is more relied upon, the cauterising, though carried out, would be less depended upon to bring about satisfactory results, so that the fatal cases should rise in number rather than fall if those who do not believe in Pasteur's treatment are reasoning correctly. This, however, by the way. We cannot but be struck by the singular want of logic manifested by "Beth Gêlert" who ascribes rabies of the dog to muzzling. This will scarcely hold good in face of the fact that the most virulent cases of rabies occur in wolves, and that in certain portions of Russia the number of deaths from wolf bites was at one time very great; these wolves then, at any rate, could not have been muzzled, so that we must look for some other cause than conditions artificially introduced by man. It is of interest to remember that the only treatment of the bites of rabid wolves attended by any measure of success is that adopted by Pasteur. It is not necessary to enlarge on these facts—they speak for themselves, and we merely draw attention to them in connexion with the above-mentioned pamphlet. "Beth Gêlert," like many others of us, is evidently a lover of dogs, but he has allowed his sentiment to blind his powers of observation and deduction; and after reading his pamphlet one is tempted to express the opinion of him that the American had of the cow that placed itself in opposition to the locomotive: "We admire his pluck, but we despise his judgment."

SANITARY REGULATION OF PILGRIM FAIRS.

DR. M. B. COLAH, late Deputy Sanitary Commissioner, Guzerat District, Bombay, has recently published a paper on this subject in the *Indian Medico-Chirurgical Review*, which contains some sensible and judicious observations that seem worthy of consideration at the present time, when the prevention of cholera forms the subject of inquiry by an International Conference. Alluding to what took place at the Hurdwar Fair in 1892, when the Government authorities considered it advisable to close the fair and prohibit further arrivals, in the interest of the pilgrims that had already arrived and of the local population and district generally, Dr. Colah says that what would otherwise have developed into a severe and widespread cholera epidemic was nipped in the bud. The step taken by the Indian Government on that occasion was not, however, popular with the natives of India, especially with those desirous of attending this religious gathering. The sanitary arrangements which had been made, and the precautions taken against the breaking out of epidemic disease were excellent as far as they went, but it became evident in the early days of the fair that the public health was not good: diarrhœa prevailed, and some cases of cholera had occurred. The decisive step was therefore very wisely and promptly taken by the authorities to prohibit the fair. The precautionary sanitary arrangements taken the previous year (1891) proved to be very efficacious, and notwithstanding that cases of cholera occurred at the fair no epidemic outbreak followed. The subject of the regulation of pilgrim traffic in India is obviously one of paramount importance. The fact is, that when the season is an epidemic one, the crowding together of a large number of people is a sufficiently powerful factor to cause a serious outbreak; while, on the other hand, during non-epidemic seasons, no great danger is incurred by the holding of such fairs if timely precautions be taken and proper sanitary arrangements are made. There is great danger, however, when cases of cholera have occurred at the site of the pilgrimage or in the villages in its vicinity, or in places from which pilgrims are likely to come, and especially if evidences of a moving epidemic influence are present. Under such circumstances governments are compelled, and rightly so, to legislate for the protection of the population. Dr. Colah contends that, in addition to the issuing of notices informing the people of the danger incurred by attending any particular fair, the government should, with a view to protect the public health, go a step further and prohibit railway companies from running special trains, restricting the human traffic to such accommodation as is available by ordinary trains; and that when cholera breaks out during a fair, proper precautions should also be taken in connexion with the dispersion of pilgrims by train, in the way of guarding against overcrowding, and in subjecting the returning pilgrims to some kind of sanitary and medical inspection, as well as in apprising the local sanitary authorities beforehand of the anticipated arrival of pilgrims at their places of destination. The *Indian Medical Gazette*, alluding to the great gathering—the Kumbh mela—at Allahabad during part of January and February of the present year, says that the fair is expected to be an exceptionally large one owing to the rumour that it is the last which will be celebrated previously to the transference of the sacredness of the Ganges to the Nerbudda. Dr. Hutchinson, the Sanitary Commissioner of the North-West Provinces, who had charge of all the sanitary arrangements at the Hurdwar fair of 1891, which proved so successful, has been making elaborate arrangements for the immense assemblage at Allahabad.

PERSONAL HYGIENE.

SHOULD the exceptionally fine weather which characterised the spring and summer of 1893 become the rule in this country—which is scarcely to be expected—the Briton would have to revise his ideas of clothing. In the more probable event of our having to lead for an indefinite period the amphibious existence to which we should by this time have become accustomed, the conservation of the heat and energy of our bodies at this variable season must be a subject of interest to us. Physiology teaches us that the chief regulator of the heat of the body is the functional activity of the skin and the lungs, and of these the former is much the more potent. The question of appropriate clothing, therefore, becomes of the first importance. It would be difficult, if not impossible, to lay down any general rule in this matter, because of the varying circumstances of age, sex, and constitution. Were we guided solely by meteorological considerations, it might be possible to strike an average heat-retaining quality in clothing which might approximately suit the weather of any given portion of the year. That this is actually done within certain broad limits is undoubtedly the case, and wise saws are to be found in folk-lore which even indicate precise dates for the "castin g" of superfluous clothing. But, as in most other matters, these problems always appear most simple to those who are more or less ignorant of the complex considerations which have weight with the scientific or initiated mind. Geographical position, the influence of which considered over a wider area is too apparent to insist upon, must be accorded a certain influence even in these islands. Portions of the country in which the mean variations of temperature and rainfall are least will require attention, and such attention the experience of the denizens of such spots and of the medical profession therein resident will indicate. Speaking generally, however, the greater the meteorological changes which influence the liberation from, or locking up within, the body of that heat which is the source of energy, the nearer a rational heat retaining average quality must be the clothing of the surface. As the fires of youth die down the greater must be the care of the individual to keep aglow the embers of life. The influence, moreover, of diathesis must not be lost sight of at any age, and any "hardening" scheme

should, in the case of delicate persons, only be undertaken under the most careful supervision. The tendency of civilisation is undoubtedly towards luxury. The backless stool of the earlier ages yielded to the perpendicular backrest of later times, and has in turn been supplanted by the cushioned lounge of the present day, in which the degenerate scions of a sturdy race, who would seem to have lost the backbone of their ancestors, may be seen reclining in attitudes of oriental effeminacy. So, too, in the matter of diet and of clothing, those who live to eat, instead of eating to live, find that the erratic production and liberation of heat require a proportionate warmth of apparel. Among those, also, who cannot be regarded as gourmands or gourmets, it must be remembered that the more constantly the surface is kept swathed in such clothing as keeps the surface circulation abnormally active, the blood-making area is robbed of its due activity and the seeds of those anæmic states which are so prevalent in our day may thus be sown. The cold bath has been found to increase the production of leucocytes and improve the tone of the arteries. A Bavarian priest, drawn like many of his order from the peasant class, and remembering the bare feet, plain fare, and rude health of his youth, has recently become quite a fashionable physician in the eyes of *blasé* Europeans. The *roué*, who has squandered both his health and wealth, walks bare-footed under the directions of this amateur physician on the dew-clad turf of his lawn; the lady of fashion, who has seen more gaslight than sunlight, does likewise; and other persons with the most diverse and opposite ailments flock to the self-constituted and one-idea'd preacher of hardihood and simplicity of life. Not that the worthy priest has anything novel to tell them, but that the irregularity of his practice appeals to their own irregularly constituted lives more than a like intelligent advice inculcated by more instructed channels. In such hardening there lurks a danger. Before the "soft Campagnian" can safely undergo a rigorous *régime* of this character, he must in many cases, and if possible, become again a "Roman" by more gradual methods; and having learned from an unhappy experience that there is no such joy as health, and no such health as wisdom, continue rich and happy in mind and in body by a regulated expenditure of energy and a rational mode of life.

THE LONDON WATER-SUPPLY.

THE report of the Water Committee of the London County Council was issued on Wednesday last. The volume contains memorandum and reports made to the council on the report of the Royal Commission on Metropolitan Water Supply by the Chairman of the Water Committee, the chief engineer, the parliamentary agent, the medical officer of health, and the chemist of the council. In the main the committee endorses the views of the Royal Commission, and gives point and force to some of their recommendations. The inadequacy of the filtering appliances, the necessity for more strict enforcement of the regulations, and the appointment of an administration to secure efficient purification of the water-supply are among the points to which attention has been directed. The conclusion of the medical officer of health is specially emphatic: "In view of the changes effected in the rivers and subsequently in the filters, the risk to Londoners is, I believe, small, and certainly intermittent; and, indeed, may be thought of as comparable to those possibilities of injury from accident in the street to which every human being is subject during the whole of his life. The risk, indeed, is to each a possibility and not a probability, but such as it is I believe it exists. If we recognise, as I believe we may, that the safety of London residents is dependent upon the efficiency with which deleterious matter in the London rivers is by artificial means removed from the water-supply of the metropolis, the conditions under which this removal is to be continuously ensured must obviously be determined with absolute precision, and an administration must be provided to secure that the object in view shall be attained." We propose to deal with the subject in greater detail in our next issue.

MEMORIAL TO JOHN HUNTER AT ST. GEORGE'S HOSPITAL.

AT a numerously attended meeting of the subscribers, held in the board-room of St. George's Hospital, the Earl of Cork and Orrery, K.P., in the chair, it was unanimously decided, on the recommendation of the executive committee, to entrust the work of a memorial to St. George's greatest son, John Hunter, to Mr. Alfred Gilbert, R.A. Mr. Gilbert proposes to execute a large bust, probably in bronze. Subject to the approval of the board of governors, the work will be placed tentatively in the central hall of St. George's Hospital. Hitherto sculpture has done but scant justice to John Hunter, and the rendering of so original an artist as Mr. Gilbert cannot fail to be of the highest interest. A sum of about £20 is still, we understand, required.

THE LONDON COUNTY COUNCIL AND GLANDERS.

THERE appears at last to be some probability of glanders in horses being got rid of in Great Britain, and consequently of another of the animal scourges which threaten the public health and wealth being eradicated. It is in London that this loathsome disease is chiefly centred, the cases occurring in the provinces being comparatively few, and it is therefore in London that the greatest efforts should be made to suppress it. As it depends solely for its maintenance and extension on its contagious properties and as its contagiousness is not extremely active, there should not be much difficulty in combating it successfully, especially as its habitat is well known to be chiefly the stables of firms owning large numbers of horses, and who are in a position to watch and control it much more effectually than the poorer class of horse owners. The wonder is that these firms do not get rid of it spontaneously, seeing the serious loss and trouble it occasions and the risk which their horsekeepers and others are obliged to incur. There is now no excuse they can offer with respect to the difficulty sometimes encountered in diagnosing or discovering the existence of the disorder in their stables, as mallein has been proved to be all but an infallible revealer of glanders whether in the chronic or occult forms. However disinclined horse owners may be to resort to the only measures capable of stamping out glanders it is now very probable that they will be compelled to submit to them, and that these measures will be enforced by the county councils and carried to a successful issue. Hitherto the central authority—the Agricultural Department—has not been sufficiently energetic in dealing with the subject, and the necessary measures have either not been adopted to the full extent or have been largely left to the option of the local authorities. This tampering with the disorder has, as might have been expected, been productive of little or no diminution in the number of horses attacked or the infected centres, and without a greater display of energy and judgment things will go on as they have been doing to the end of time. The London County Council, which has all along shown itself fully alive to the necessity of getting rid of the disease, has found itself in a comparatively impotent condition to deal with it, and has been driven to seek an interview, by deputation, with the Minister for Agriculture. This interview took place on Feb. 22nd, and resulted in Mr. Gardner promising to do what might and should have been done long ago. The various powers needed for ridding London of glanders, and which were asked for by the Council have been conceded to such an extent as to

enable it to go to work with the expectation that it will soon be master of the contagion. A much needed regulation to be introduced is the compulsory notification of the existence of the disease by veterinary surgeons for a small fee; another is the allowance of compensation to the minimum amount of £2; the maximum not exceeding one-fourth of the value of the animal immediately before it became affected. There is also a prospect of power being conferred to effect forcible entry into stables where the disease is suspected to exist. With these concessions actively brought into operation it is to be hoped and expected that we shall soon hear the last of glanders, and that, when once extirpated, care will be taken to prevent its reintroduction from abroad.

DECREASE OF THE PRISON POPULATION.

THE report on the Census in 1891 calls attention to the marked decrease of the prison population between 1881 and 1891. In 1881 the number of prisoners enumerated in England and Wales was 28,756, and nearly a thousand fewer than in 1871. In 1891, however, the number fell to 17,303, showing a decline of no less than 38 per cent. from the number in 1881, notwithstanding an increase of 11·7 per cent. in the population during the intercensal period. Thus, of 100,000 persons living in England and Wales, 107 were in prison in 1881, while in 1891 the number in prison had fallen to 60. The cause of this marked decline in the number and proportion of the prison population in 1891 is discussed by the Census Commissioners in their report with satisfactory result. It is pointed out that according to the police returns a notable decrease has taken place in the number of the criminal classes. The number of persons belonging to these classes was estimated by the police at 71,637 in 1880–81, and at 51,095 in 1890–91, showing, on the assumption that the two estimates were made upon approximate bases, a reduction of nearly 29 per cent. in the ten years. As, however, the decrease of prisoners in the same period was 38 per cent., a further explanation is needed than the reduction of the criminal classes. It is well known that there has been a decided tendency in recent years to shorten sentences of imprisonment. There has, however, also been a well-marked tendency to substitute other penalties for short sentences of imprisonment, and therefore the proportion of short sentences to all sentences of imprisonment has diminished. It is a fact, moreover, that the figures published in the "Judicial Statistics" do not afford a satisfactory basis for calculating correctly the average term of imprisonment. The Rev. W. D. Morrison, chaplain of H.M. Prison at Wandsworth, in a recent correspondence in *The Times*, took exception to the conclusion expressed in the Census Report that the marked decline in the prison population was not explained by the reduction of sentences, and, from a perfunctory consideration of the proportion of convictions, expressed the opinion that the statistics of conviction, are "in marvellous harmony with common sense, which surely teaches us that we are very much the same to-day, as far as conduct is concerned, as we were ten years ago." The Registrar-General, in his reply to the prison chaplain, pointed out how incomprehensibly that official had misapplied the statistics of convictions published in the "Judicial Statistics." It appears to be true that the total convictions were 542,319 in 1881 and 611,628 in 1891, thus showing a proportional increase in the ten years almost identical with that of the population. These figures, however, have no true bearing upon the number of the prisoners, as of the total convictions only a very small proportion are sentences to imprisonment, and the proportion in 1881 and in 1891 was very different. The number of sentences to imprisonment, which was 109,912 in 1881, declined to 71,635 in 1891, the decrease being equal to 35 per cent., and almost identical with the decrease of the prison population, which was 38 per cent. in the same period. It is impossible, therefore, to doubt that the Census Commissioners were justified in coming to the conclusion that the diminution in the number of prisoners is attributable partly to the falling off in the numbers of the criminal classes and partly to the substitution of other forms of punishment for imprisonment in cases of petty offences. While the true import of the reduction of the committals to prison, as evidence of moral progress, is open to much doubt, there can be no cause why the reduction of the numbers of the criminal classes, if a fact, should not be regarded with unqualified satisfaction. Those quarters of our large towns in which the criminal classes congregate are invariably sources of sanitary as well as of moral danger to the community. If the owners of house property in such quarters were, in the interest of the community, held directly liable for injury arising from their neglect of the responsibility of ownership, distinct benefit would result to the public health and to the general public welfare.

THE DIFFUSION OF SMALL-POX.

IN London last week 18 fresh attacks from small-pox were recorded, 2 deaths were registered, and 81 patients remained under treatment on Feb. 25th, of whom 63 were down-river cases and 18 in the Highgate Small-pox Hospital. Three deaths from the disease were registered in West Ham, where 9 fresh attacks were heard of. Of the larger provincial towns Birmingham had by far the greater number of new cases—namely, 52, with 4 deaths, the attacks during the last six weeks having been 349; Handsworth, Staffordshire, had 6 cases last week, Aston Manor 7, Walsall 5, and Nottingham 4, with 1 death. Bristol showed a rise from 4 to 11, and had 2 deaths. Oldham continues to record attacks, 10 being heard of last week. Bradford had 20 cases, the highest weekly number during the present year. Other towns had small-pox of insignificant amount. Last week 4 fresh cases were reported in Edinburgh. In Leith 5 fresh cases were reported and there was 1 death.

DEATH UNDER NITROUS OXIDE GAS.

FORTUNATELY fatalities under this anæsthetic are extremely rare, and as a rule are, when carefully investigated, found to have been due rather to some concurrent circumstance attending the administration than to the gas itself. The evidence offered at an inquest, held on Feb. 21st, respecting the death of a Mr. Lee, aged twenty-five, who died in a dentist's house after the extraction of a tooth for which nitrous oxide gas was given, is hardly sufficient for us to come to a final decision upon the true cause of death. The facts as reported are that Mr. Lee, a man in ordinary health, at two o'clock in the afternoon entered a dentist's surgery in the City and complained of toothache. He was advised to take gas and have the tooth removed. A neighbouring medical practitioner was called in, nitrous oxide gas was administered, the patient went under its influence without anything unusual taking place, and the tooth was extracted. Subsequently—we are not told how long afterwards—the breathing became "heavy," and finally ceased; the patient was placed supine upon the floor, and artificial respiration was attempted. It is stated that "the throat became so swollen that the mouth could not be closed," and tracheotomy was performed, artificial respiration being practised for half an hour; the patient, however, never recovered. The gentleman who gave the gas is reported have said that he had had an experience of between 30,000 and 40,000 cases without a previous accident. He further stated that he had tried the use of ether and nitrite of amyl which, being cardiac stimulants, would point to there having been some symptoms of circulatory failure. Whether the death was purely asphyxial, as the verdict averred, or not, we cannot upon this

evidence decide. The necropsy was said to have revealed that the windpipe was filled with mucus—a fact which points rather to some irritant being at work. Impure nitrous oxide is a powerful irritant from the presence in it of higher oxides of nitrogen, and could have produced this result. We are not told whether the patient had just partaken of luncheon and vomited, nor is any statement made as to whether the gas itself was properly prepared and had been used safely with other patients. Casualties, which probably can be counted on the fingers out of many millions of administrations of nitrous oxide gas, have been due to shock, spasm of the larynx, impaction of foreign bodies in the air passages—e.g., blood-clot and mucus, fragments of teeth, &c.—or syncope. To which of these classes the lamentable death of Mr. Lee belongs, it is impossible for us to say. Recently a death occurred while a patient was waiting the turn to have the gas, and no doubt fear is a potent element in many deaths put down to an anæsthetic. It has to be remembered that so enormous is the use of this anæsthetic at the present time that with care and skill the risks its use entails may, even in the face of such sad occurrences as the one of which we are speaking, be taken as infinitely small.

THE NEW BILL OF THE SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN.

THE amended bill relating to the prevention of cruelty to children now in the hands of members of Parliament is in many ways a more exact and practical measure than the Act upon which it is founded. Among other matters of comparatively technical interest we would note that the bill makes effective provision for the responsibility resting upon parents and guardians, under all circumstances, in respect of children under their charge; it insures the inspection of acrobatic and other performing children; it makes careful arrangements for the reception in specified "places of safety" for the subjects of cruel treatment; and it considerably adds to the facilities in giving evidence and extends their scope. In these various modifications we recognise as many proofs of increased utility. A clause here or there will doubtless call for revision and amendment, but the measure as a whole, we feel assured, will justify its claim to a place among the legislative acts of the near future.

FOUNDER'S DAY AT MASON'S COLLEGE.

FOUNDER'S DAY at Mason's College, Birmingham, was celebrated on Friday, Feb. 23rd, by a public dinner, over which Lord Kelvin presided, supported by, among others, the Mayor of Birmingham, the headmasters of Rugby and Repton, Mr. Richard Chamberlain, and the Principal (Professor Heath), the Bailiff (Mr. Oliver Pemberton, F.R.C.S.), the Dean of the Medical Faculty (Professor Windle), and the Registrar (Mr. Morley) of the College. Lord Kelvin, in a long and eloquent speech, testified to his belief in the high efficiency of the education offered by Mason's College to the neighbourhood, and hoped that the time would come when those citizens of Birmingham who could afford to give their sons an education higher than one fitted merely for earning a livelihood by handicraft would take advantage of their college, "great at present and going to be greater and greater and more and more successful." Lord Kelvin believed that there was a general feeling that there ought to be a Midland University. He said that the historic universities of Oxford and Cambridge no longer served the needs of the country, as was shown by the establishment of the Universities of London, Victoria, and, quite recently, Wales; and he thought that if the pecuniary strengthening which Mason's College required could be supplied, the Midland University of England, or Birmingham University, would very properly come into existence. The Principal of the University alluded to the deficiency of equipment from which the engineering and physical laboratories were suffering, and spoke of their professors as "doing all that skill and enthusiasm could do to overcome the difficulties in their way, but they could not go on for ever making bricks without straw." Dr. Windle, Professor of Anatomy in the College, and Dean of the Medical Faculty, referred to the position of Mason's College as an institution for medical education, with particular reference to the recent report of the Royal Commission on a university for London. Professor Windle felt, as the dean of many a London school has long felt, that his medical pupils were placed in an unfair position as regards the students of many other schools. He saw no reason why the Birmingham student should be required to forsake the large and valuable field of clinical research lying under his hand in the great midland city and go to a smaller school, if he desired to place the magic initials of M.D. after his name. From the point of view of the Dean of the Medical School, he had never ceased to clamour in season and out for a Midland University. The Mayor of Birmingham (Mr. Alderman Johnson) joined in the general desire to see Mason's College better supported pecuniarily and placed on a more important basis as "the great Midland University," and trusted that Lord Kelvin's appeal would find substantial response among the citizens.

SANITATION IN THE PORT OF LONDON.

DR. COLLINGRIDGE, the medical officer of health for the Port of London, whose report has just been published, gives in his half-yearly statement a record which is, as usual, full of interest. The details are very voluminous, and would require the devotion of considerable space to worthily set them forth. To give an idea of the work accomplished in connexion with the sanitary oversight of the shipping entering the port, it may be stated that during the half-year over which the report extends no less than 11,431 vessels have been submitted to inspection, being an increase of 2658 on the total of the previous six months. As a result of this inspection 497 were found to need attention with regard to their sanitary arrangements, whilst in 185 ships structural alterations had to be carried out. As many as 4068 vessels were visited at Gravesend in conjunction with H.M. Customs, and 2823 of these, carrying 10,953 passengers, were medically inspected. This number, as previously intimated, was far in excess of that reported in the previous return. All this important work has, as Dr. Collingridge states, been effected without injury to trade, and by the most cordial coöperation of shipowners. In reference to the treatment of cholera patients on board ship, he expresses the opinion that all such patients should be isolated for at least ten or twelve days after complete convalescence. With respect to infectious disease discovered in connexion with the enforcement of regulations for the prevention of the ingress of cholera, he gives statistics to show that during the years 1883 to 1891, in the course of which period there was no medical inspection of shipping at Gravesend, the average number of cases of infectious diseases removed was only 5·5, and that the initiation of that system in August, 1891, at once raised the number for the latter half of that year to 26 (16 being cholera cases and 10 of other diseases). In the past year the number of cases so detected and removed amounted to 35, of which 10 were those of cholera and 25 those of other infectious diseases. Dr. Collingridge further shows the difficulty of dealing with a purely medical question without the establishment of a thoroughly practical system, and he accordingly recommends that the question of admitting an incoming vessel to *pratique* should be decided by the port sanitary authority, and for that purpose a medical officer should always be on duty at Gravesend, and should accompany the Customs officers on their visit to every vessel, announcing his decision before any other person is allowed

to board or leave the ship. He also offers the suggestion that the control of yellow fever and plague—the only two diseases directly dealt with by the Government—should be transferred from the Privy Council to the local sanitary authority. The report then speaks approvingly of the service rendered by the disinfecting apparatus in the Denton hospital, gives details concerning thirty-seven seizures of unwholesome food effected during the half-year, and concludes with some remarks on the working of the Canal Boats Acts, 1877 and 1884, in respect of which statistics are afforded of a satisfactory character.

SURGICAL AID SOCIETIES.

THE report of a recent meeting of subscribers to the North of England Surgical Aid Society brings before us once more the claims of a class of institutions than which few have rendered more timely service to the suffering poor. Less concerned with the pressing emergencies of illness or injury, they are indispensable to the complete success of treatment, especially when this implies, as it often does, no better possible condition than that of maimed recovery. The management of the society which we have mentioned is in more ways than one commendable on account of its prudent and intelligent method. The requirements of patients are ascertained by competent medical men, and are at once, if possible, provided for, so that the annoyance of delay is in a great measure obviated. Fortunately for the poor and for the credit of charity the northern association does not stand alone in this respect, but necessity elsewhere and everywhere will, as a rule, afford the surest guarantee for prompt assistance. We would further note, as a ground of public confidence in institutions of this kind, the fact that the patients themselves are to some extent liable for the cost of their appliances. This is a circumstance which in most cases materially enhances the appreciation of benefits received, and the North of England Surgical Aid Society is no exception to the rule. A decrease in the amount of subscriptions to this deserving charity, common as it is to the whole order of public benefactions, should, we do not doubt, be regarded merely as a side issue of the still prevalent commercial depression. If so, it affords no true indication of the attitude of the public mind towards the system of surgical aid, nor we may be sure any proof of a desire to starve by neglect a form of sympathy so rational and so practical.

THE PHONOGRAPH AND MICROPHONE IN MEDICAL STUDIES.

AT the conversazione held in the Faculty Hall, Glasgow, on Friday, Feb. 23rd, Dr. Macintyre exhibited a number of new electrical instruments, as well as some interesting microphonographic records. With the perfection to which the instrument has now been brought the phonograph is not unlikely soon to take its place as an instrument of instruction in medical teaching. Dr. Macintyre was able to demonstrate a number of cough sounds and varieties of hoarseness due to different pathological conditions; and he has been able by special recording arrangements to register the heart sounds. Doubtless, stethoscopic sounds offer the greatest difficulty of all, but by properly arranged conducting apparatus fairly good records have been obtained of different sounds heard within the chest. Dr. Macintyre also exhibited a number of microphones—some of the ordinary varieties and others adapted specially for medical purposes. The principal one of interest was an instrument enabling a number of students to listen to the sounds of the body at the same time, and also to transmit these sounds to a distance. Dr. Macintyre showed how these might be utilised so that students in a class-room of a medical school could hear the chest sounds of a patient in a hospital at a distance. The slight disadvantage of the apparatus at present is that it is extremely sensitive, so that other sounds may sometimes be heard at the same time. The apparatus consisted of a microphone specially adapted for application to the human body, an induction coil to transmit sounds to a distance, and a small battery and telephone receivers, of which the Ader has been found to be the best. By such means it will doubtless be possible to fit up medical schools so that large numbers of students may be trained at the same time to appreciate the sounds heard within the body, even though the patient may be at a considerable distance, and with improvements in the recording apparatus of the phonograph to take permanent records of the same.

THE NATIONAL DENTAL HOSPITAL.

THE Duke of York, accompanied by the Duke of Fife and Prince Edward of Saxe-Weimar, and attended by Major-General Sir Francis de Winton and Captain the Hon. D. Keppel, opened on Saturday afternoon the new building of the National Dental Hospital, Great Portland-street, of which charity his Royal Highness has graciously become president. The new building has been erected at a cost of about £10,000 and is the gift of the Dowager Lady Howard de Walden. The building is a handsome erection, having an exterior of red bracknel bricks with carved friezes. To those entering it presents a light and bright appearance; this in a large measure is due to the walls of the broad staircase and rooms being lined with white tiles, which have a further recommendation from a sanitary point of view. On the ground floor are the lecture-hall, the waiting-room, with separate staircases for male and female patients, the extracting-room and a suite of rooms for "gas cases" (consisting of an ante-room where the patients are got ready, leading into the operating-room proper, which in turn opens into a third room where they are allowed to rest before emerging into the main passage). The second floor comprises the mechanical laboratory, a metallurgical laboratory with furnaces designed by Dr. Lapraik, the lecturer on metallurgy, an operative demonstration-room, the museum (which, by the way, might easily and with advantage be made larger, and the board-room. The stopping room, which occupies the whole of the second floor, will accommodate between fifty and sixty chairs, and is fitted up with all modern accessories, such as electric lamps with reflectors for use in foggy weather, saliva ejectors, and an electric current to run the dental engines. In the basement are the students' common room, lavatories, &c. The building is heated with hot water, and is illuminated by the electric light. The whole may be fairly described as a model dental hospital, reflecting great credit upon the committee of management and the architect.

THE CONTAGIOUSNESS OF PHTHISIS.

IN the course of his annual report made at the general meeting of governors of the Royal National Hospital for Consumption and Diseases of the Chest, Dr. Sinclair Coghill drew especial attention to the precautions now being adopted there to disinfect sputa. A code of instructions regarding expectoration is drawn up for the observance of the patients. Special vessels and handkerchiefs are provided, and after use are subjected to disinfecting processes. It will be seen, therefore, that the doctrine of contagiousness of phthisis is fully acted up to at the Ventnor Hospital. In relation to this subject Dr. Coghill made the following remarks:—

"The view of the infectious nature of consumption, established by the investigations of Professor Koch, has naturally directed the attention of the medical profession to the prophylaxis, or means of preventing the spread of tubercular disease. This becomes a question of the highest interest both to the individual and to the community, and in a hospital where a large number of consumptives are congregated the question attains its greatest importance. There is now

no doubt that in those instances in which several members of one family successively succumbed to consumption, and which occasioned the wide assumption of the hereditary nature of the disease, the fatal results were due not to inheritance but really to infection. It is now ascertained beyond question that the contagious material is contained in the sputum of the affected persons, and that this when dried becomes the vehicle of infection."

No doubt it is well to recognise the main fact that flows from the discovery of the tubercle bacillus, but to place the idea of contagiousness in the forefront is surely going a little too far, and is a view, moreover, which cannot conduce to the care or comfort of the unfortunate victims of phthisis. It is to be regretted that Dr. Coghill, in penning these words, did not modify their dogmatism, for no one knows better than he that the acquirement of phthisis depends in as great a measure on inherited disposition and on environment as upon exposure to sources of infection. We fear lest too great a concentration of idea upon the single factor of contagiousness may lead to a neglect of other and not less important considerations in the etiology of the disease.

INTERNATIONAL MEDICAL CONGRESS.

THE South-Eastern and the London, Chatham, and Dover Railway Companies have agreed to issue tickets to "guests" accompanying members at the same rates as to members themselves. The Secretary-General (Professor Maragliano) has forwarded documents for identification on the journey to all enrolled members. Any members who have not yet received these should apply for passes, instructions &c. to the Secretary to the English Committee, Mr. G. H. Makins, 47, Charles-street, Berkeley-square, London, W. These passes are issued only to members of the medical profession and their relatives. Gentlemen wishing to join the Congress under Statute 17, as being interested in one of the Sections, must apply directly to the Secretary-General, Eleventh International Medical Congress, Rome.

OPHTHALMIA AT THE ELY SCHOOLS, CARDIFF.

ACCORDING to the *South Wales Daily News*, the children at the Ely schools, Cardiff, have been suffering from ophthalmia. Those affected, who had been removed to the Cardiff workhouse, will shortly be taken to Porthcawl, at which place the guardians are stated to be negotiating for the purpose of procuring the necessary accommodation for their reception. It is hoped that careful treatment, combined with sea air at Porthcawl, will afford the best means of overcoming this troublesome affection.

MR. J. RYLAND WHITAKER, B.A., M.B. Lond., L.R.C.P. and L.R.C.S. Edin., late Senior Demonstrator of Anatomy, has been appointed Lecturer on Anatomy at the Edinburgh School of Medicine, Minto House. Mr. Whitaker will commence his duties on May 1st, the beginning of the summer session.

OWING to the indisposition of the President, Mr. Arthur E. Durham, past president and treasurer, will take the chair on the occasion of the anniversary dinner of the Medical Society of London, at the Whitehall-rooms, Hôtel Métropole, on Thursday, March 8th.

AT the Council meetings of the London and Counties Medical Protection Society held since the vacation about 500 new members have been elected. At one meeting over 150 members were accepted. A large number are now awaiting election.

DR. JOHN G. HEWITT, assistant demonstrator at the Cambridge University Chemical Laboratory, has been appointed by the Governors of the People's Palace to the vacant Professorship of Chemistry.

IT is with pleasure we note that the University of Cambridge, always alert to honour men of science, propose to grant the comparatively new degree of Doctor in Science (*honoris causâ*) to Professor S. Ramón y Cajal, Professor of Histology in the University of Madrid, and the next Croonian lecturer at the Royal Society.

PROFESSOR BURDON SANDERSON, M.D. Edin., F.R.S., Waynflete Professor of Physiology in the University of Oxford, and Mr. T. Pridgin Teale, M.B. Oxon, F.R.C.S., F.R.S., have been selected by the University Board of the Faculty of Medicine to represent the University of Oxford at the forthcoming International Medical Congress.

WE much regret to record the death, at the age of seventy-seven, of Mr. Barnard Holt, F.R.C.S., consulting surgeon to the Westminster Hospital, which occurred last Tuesday at his house in Savile-row.

AT the next meeting of the Odontological Society of Great Britain, to be held on Monday, March 5th, at 40, Leicester-square, Mr. T. E. Constant will read a paper on "Pental."

THE Royal Hospital for Diseases of the Chest, City-road, London, has been presented by the Empress Frederick with a portrait of herself.

THE LANCET
Special Analytical Sanitary Commission
ON
YEAST SUBSTITUTES,
WITH ESPECIAL REFERENCE TO THE USE OF ALUM IN BAKING POWDERS.

THE uncertainty of the action and quality of leaven or yeast doubtless gave rise to the idea of the use of other materials to effect, by means of the evolution of carbonic acid gas, a desirable degree of porosity in bread, pastry, &c. It is well known that in the time-honoured method of bread-making, in which yeast is used as a ferment, if at a certain point in the process the dough is not straightway placed in the oven a heavy loaf results; that is to say, if the first fermentation be allowed to proceed too long a second (acid) fermentation sets in, which gives an undesirable quality to the bread, acetic, butyric, and lactic acids being formed, which impart to it an unpleasant taste. Badly made bread is probably often the cause of derangement of the digestive tract; the "fermentative changes induced in the course of preparation continue in the stomach with generation of carbonic acid gas, and consequent flatulence, heartburn, and acid eructations." Although the substitution of a good baking powder would avoid with certainty all risk of objectionable changes of this kind, yet the flavour of bread well and properly made with reliable yeast is decidedly preferable to that of bread in which baking powder alone has been used. This important difference as regards flavour is due probably to the complex action of the yeast in converting part of the carbohydrates of the dough into carbonic acid and alcohol; besides, it may also impart an acceptable flavour characteristic of itself, as, for instance, in the case of brewer's yeast. The fact that part of the soluble constituents (the carbohydrates) of the dough is converted into carbonic acid gas and alcohol, which are of course dissipated during cooking, has afforded an argument in favour of the use of baking powder because it does not effect any change in the composition of the bread, although doubtless the mineral substances which result from the decomposition of the powder contribute unfavourably to the taste and character of the cooked product. It may be of interest to mention that it has been computed that the annual loss of alcohol in bread-making

due to the action of yeast on the sugars and dextrine of the dough amounts to about 300,000 gallons, all attempts to recover which have been fruitless. When, as has been suggested, bicarbonate of ammonia is mixed with the dough, to effect a porous loaf, or when, as in the Dauglish process, carbonic acid is forced into the dough by pressure from without, no residual products are of course produced in the loaf, for in the former case the ammonia salt decomposes completely into ammonia and carbonic acid gases, while in the latter the carbonic acid gas is simply expelled by the heat of the oven. It may not be generally known that Dauglish's process can be fairly well imitated by kneading the dough with ordinary soda water freshly opened.

There is no reason to suppose that the use of a good baking powder is unwholesome. Whatever may be said for or against the use of baking powder, one thing is clear, which is that this convenient form of yeast substitute is now very largely used in the preparation of certain forms of food (e.g., bread, pastry, and cakes), and especially by the poorer classes. This being so, it is highly desirable that the purity and wholesomeness of yeast substitutes, seeing that they are exclusively used for one distinct purpose—viz., that of incorporating with food in the course of preparation, in order to make it light and porous—should be as far beyond reproach as true yeast itself, or any other substances used in the preparation of food. Indeed, so extensively has baking powder come to be used in the place of yeast that greater attention should be given in order to secure it against the resources of the unscrupulous manufacturer. Apart from the possible adulteration of baking powder with injurious materials, the general introduction of this class of preparation was apparently not anticipated by those who were responsible for the passing of the Food and Drugs Act, or else it was entirely overlooked by them, since it was ruled in a case which was recently heard in the Court of Appeal, after two years' litigation in inferior courts, that baking powder could not be viewed as an article of food within the meaning of that statute. According to this ruling, therefore, the employment in baking powders of objectionable ingredients such as alum, which is substituted for the more expensive tartaric acid for the purpose of effecting the disengagement of carbonic acid from bicarbonate of soda, does not constitute a legal offence. As we pointed out in a notice of this case in THE LANCET,[1] the arguments upon which this judgment was based were as follows: (1) That the sale of alum in itself is not an offence, even though the seller may know that the buyer is going to mix it with bread, and therefore the fact of the alum being sold mixed with other things does not alter the position; (2) that the presence of ground rice (a common constituent of baking powders) does not make the powder a food, the rice being merely used as a vehicle; and (3) that the purchaser, if he afterwards mixes such powder with food with intent to sell, may commit an offence, although the vendor would not be committing one; and, again, for his own use, anybody may employ baking powder containing alum, and, that being so, it would be strange for the vendor to be liable to penalties.

We only accept this decision on the legal aspects of the case, for it is generally admitted, and was even admitted by the court, that alum is injurious. We go a step further and maintain that the presence of alum in baking powder is objectionable because its addition to food renders certain essential ingredients (soluble albuminoids and phosphates) inert and indigestible. Obviously there is only one use for baking powder, and that is for the purpose of mixing with certain food materials with the object of rendering the final product porous and light. Its ultimate destination, therefore, is the human stomach; but although *per se* it is not a food, yet it is used to fulfil an office in food comparable with that of pepper, mustard, or salt. Thus, while baking powder ministers to the appearance of food, condiments add to or develop its taste. The decision, therefore, as it now stands, allows the use of an admittedly injurious salt as a fit and suitable constituent of baking powder. The absurdity of the position is manifest, since, as baking powder is not an article of food within the meaning of the statute, it opens up the possibility of manufacturers adding with impunity substances of even a worse or more objectionable kind. In that case, the sooner baking powder comes within the meaning of the Act the better, and the more satisfactory will it be for the public.

In the meantime it is right and advisable, we think, that the public should know the names of the manufacturers who professedly place on the market baking powder free from alum; but the public have no ready means of arriving at a decision for themselves as to whether a baking powder is devoid of objectionable materials or not, and it was a knowledge of this fact that prompted us to invite "all firms professing to supply baking powder free from alum to submit their names to us," after which we would "procure in the open market specimens of the goods and submit them to analysis in THE LANCET Laboratory, placing the results in due course before our readers." The results then promised, and since obtained, are the subject of the present report.

Of twenty specimens of baking powder examined thirteen were sent in response to our invitation. The names of the makers of these specimens are as follows:

1. G. Borwick and Sons, 24, Chiswell-street.
2. Allen and Co., 441, New Cross-road.
3. Freeman and Hildyard, Dover-road, Borough, S.E.
4. W. G. Dunn and Co., 21, Mincing-lane.
5. Goodall, Backhouse, and Co., Leeds.
6.* H. D. Thatcher and Co. (New York): Potter and Sacker, 80, Fenchurch-street, E.C.
7. Harvest, Dowgate Dock, Upper Thames-street, E.C.
8. B. Soddy, 243, Walworth-road, S.E.
9.* S. Chivers and Sons, Histon, Cambridge.
10.* Wrights, the Humber Packing Company, Wilmington, Hull.
11.* Joseph Lingford and Sons, Bishop Auckland.
12.* Sutcliffe and Bingham, Manchester (Kkovah brand).
13.* J. Farquhar and Sons, Castleford, Yorks.

* Those marked with an asterisk could not be procured independently, since they are produced and sold exclusively in the provinces or elsewhere, but not in London.

All these were found to be free from alum or any objectionable constituents, while the ingredients concerned in the production of carbonic acid were of ascertained purity.

In addition to the above we were able to procure seven other specimens, two of which were found to contain alum, so that, judging from this inquiry, the chances of obtaining baking powders in which alum is a constituent are at present 2 in 20, or 10 per cent.; but in view of the recent decision we may reasonably anticipate an increase in the number of alum powders offered for sale. The following samples of powders obtained by purchase, which also proved on analysis to be free from alum and to be composed of ingredients of acceptable quality, bore upon the packets the following names:—

14. Yeatman & Co., Denmark-street, E.
15. Ray's Leaven (address could not be ascertained).
16. Bird, Devonshire Works, Birmingham.
17. Hales' Baking Powder, Hales, 100, Drury-lane.
18. Empire Baking Powder (address could not be ascertained).

According to the results of this investigation, good baking powder may be divided into two classes—viz. (1) those in which tartaric acid ($H_2C_4H_4O_6$) is used to displace carbonic acid from the bicarbonate of soda ($NaHCO_3$); and (2) those in which acid tartrate of potassium ($KHC_4H_4O_6$) is made to perform the same office. In the former case the following equation serves to illustrate the reaction: $H_2C_4H_4O_6 + 2NaHCO_3 = Na_2C_4H_4O_6 + 2H_2O + 2CO_2$, while in the latter the change may thus be represented: $KHC_4H_4O_6 + NaHCO_3 = KNaC_4H_4O_6$ (Rochelle salt) $+ CO_2 + H_2O$. Free tartaric acid was present in twelve of the twenty specimens examined, and cream of tartar (acid tartrate of potassium) in six. The former generally yielded a larger volume of carbonic acid gas and with greater rapidity, a result which is doubtless due to the comparatively quick solubility of tartaric acid. The disengagement of gas from the alum powders was, however, very slow, the change taking place being represented by the following equation (assuming that potash alum is used): $K_2Al_2(SO_4)_4 + 6NaHCO_3 = K_2SO_4 + 3Na_2SO_4 + Al_2O_3 + 6CO_2 + 3H_2O$. The salts remaining behind in alum powders on the completion of the reaction are therefore the sulphates of potassium and soda, with alumina, or probably hydrated oxide of aluminium. The quantity of carbonic acid given off by the tartaric acid powders ranged from 54 to 11 times the volume of the powder, the average amount being 25 volumes of gas. Similarly the cream of tartar powders yielded from 20 to 9 times their volume of carbonic acid, the average being 13. The alum powders yielded respectively 7 and 11 volumes of carbonic acid gas. Although these great variations occur in the amount of gas evolved, yet the quantity of powder recommended to be used is the same in the majority of cases—viz., one heaped

[1] THE LANCET, Jan 27th, 1894

teaspoonful to one pound of flour. In all the specimens analysed the end reaction was decidedly alkaline, so that carbonate of soda is generally in slight excess. Except in one instance (Thatcher), in which sugar of milk is evidently substituted, starch (commonly rice) is a usual constituent of baking powders, and is doubtless employed as an excipient.

The results, of which our readers will need no interpretation, are of interest in affording a fairly comprehensive account of the chief variations in the composition and nature of the baking powders which are commonly sold to the public in this country. We commit them to publication in the earnest hope that the proper authorities will soon recognise the necessity for immediate legislative action in this matter. It is an utterly illogical condition of things that, while the Act provides against the use of alum in bread, it offers no remedy against the employment of the same agent in baking powder, since the latter is used for one, and only one, purpose—viz., that of mixing it with certain food materials with the object of rendering the cooked product attractive in appearance, porous, and light.

THE LANCET LABORATORY.

THE INTERNATIONAL SANITARY CONFERENCE.

(FROM OUR SPECIAL CORRESPONDENT.)

Paris, Feb. 26th.

THE International Sanitary Conference is only now approaching the more knotty and delicate questions which it has to decide. Thus, one of the two subcommittees or sections that were appointed to study the dangers caused by the pilgrimages to Mecca viâ the Persian Gulf has practically terminated its labours. It recommends that there should be a system of medical inspection on the landing of pilgrims at the ports of the Persian Gulf. But the section does not explain how this port sanitary authority is to be established or controlled. It has proclaimed, as a matter of principle, that such an authority should exist. This is well and good in its way, but the whole difficulty rests in its appointment. As yet Persia has done nothing, and what little has been attempted by the Turkish Government has certainly not been very successful. This is amply shown by the condition of the Camaran quarantine station, which is in itself another and also a very delicate matter before the Conference. So far as Persia is concerned, that country is represented by able delegates, who have shown that they possess great local knowledge. Unfortunately, they are exceptionally reticent whenever there is any need for suggestions. As the question under discussion especially affects their own country, it was hoped that the Persian delegates would have some proposals to make; as yet, however, while everyone else is agreed that sanitary authorities should be established in Persian ports, they give no indication as to how and by whom these port sanitary authorities are to be appointed. To speak frankly, it must also be said that, on the other hand, no great confidence is felt in either the Turkish or Persian authorities. The Turks have shown their incompetence, while the Persians have not yet proved their competence. It is not easy to propose the establishment in Persian ports of European sanitary authorities. Even if such a foreign intervention were accepted by the Persian Government, which of the various European Powers would undertake the work, and would that Power be acceptable to the other Powers? An international sanitary committee might, it is true, be appointed to organise defensive measures on the Persian Gulf; but that, again, is a proceeding not devoid of complications and inconveniences. The French representatives at the Conference, who are chiefly responsible for the drawing up of the programme of discussion, are in the main preoccupied with the sea route. This is, perhaps, a mistake, for there is greater danger by the land route. The persistence of cholera in the Yemen should be a subject of special study. It will be remembered that Turkish troops were sent to this province in order to quell an insurrection, and that they suffered greatly from cholera. There were, at the same time, pilgrims from the Yemen who went to Mecca. Hardly any control is exercised over these pilgrims, who travel by land. With regard to the sea route, the attitude of the British delegates is simple and unchangeable. Their principle is that to stop healthy passengers and a healthy ship does not prevent but actually creates danger. Dr. L. Arnaud's description of the quarantine station at the island of Camaran in the Red Sea amply proves this assertion.[1] He boldly states that this island is simply a "depôt of cholera," where healthy crews and passengers are infected. As already related, the accommodation is so bad that disease is engendered. The retention of passengers here greatly increases the danger, and there have been more epidemics since the opening of this quarantine station than there were previously. Short of detention, however, the British representatives are ready to accept any reasonable precaution, such as, for instance, a rule to prevent anyone embarking at an Indian port with dirty linen. M. Henri Monod delivered a very remarkable speech on the sanitary condition of India and, as mentioned last week, submitted to the members of the Conference a diagram setting forth how cholera had increased. To this he has added two other diagrams, one on the general mortality, and the other on the mortality from fevers. By the side of these three diagrams there are calculations showing that the mortality increases by periods of years. Thus the general mortality during the four years 1881 to 1884 amounted to an annual average of 4,769,496. During the second period of four years (1885–88) it rose to 5,198,761, and during the third period of only three years (1889–92) it was 5,640,434. The annual average of deaths from fevers was for these periods 3,113,599, 3,458,456, and 3,803,340 respectively. The cholera statistics, going further back, have enabled the French delegates to make a calculation for three periods of five years each, comprising the fifteen years from 1877 to 1892. During the first five years the average number of deaths from cholera in India was 243,901, during the second 323,909, and during the third 456,724. Surgeon-General Cunningham will reply to these criticisms, and, of course, he will be able to point out that the population of India has greatly increased and that with the progress of years the statistics have been more fully and accurately collected. While the Conference was discussing what measures should be taken to prevent pilgrims from conveying cholera from place to place, one of the representatives of the United States of America struck a new keynote. He inquired whether the Conference could not establish a set of rules by which emigrants could be watched, examined, or controlled in such a manner as should prevent them from carrying over to the United States the germs of cholera, small-pox, and kindred diseases. It was all very well (he said) to impose medical inspection on Mahommedan pilgrims embarking for Mecca, but why not take similar precautions with respect to emigrants embarking for America? It is not yet known how this question will be answered by the Conference, but the speech of the United States delegate created a considerable sensation, and doubtless the representatives of the other Powers will take some time to consider the matter.

The members of the Conference have been entertained in the most lavish manner. They meet in the morning at the Ministry of Foreign Affairs, close to the Legislative Chambers on the Quai d'Orsay. In the case of the discussions being prolonged into the afternoon a most elaborate lunch is served to them and there is always at hand a plentiful supply of refreshments of every description, both simple and costly. Almost every evening there is some entertainment awaiting them. They were invited to a magnificent ball given at the Palace of the Elysée by the President of the Republic, M. Carnot. They were received at another great ball organised by the Paris Municipality at the Hôtel de Ville. Then a State dinner was given in their honour by M. Dupuy, the President of the National Assembly. But perhaps the most remarkable entertainment of all was the dinner given by M. Raynal, the Minister of the Interior. Not only was the *menu* a triumph of gastronomy, but it was followed by an entertainment at which the most celebrated artists of Paris played, sang, and recited. For two to three hours the delegates were able to see and hear actors, actresses, singers, and musicians whose reputation has spread to all parts of the world and whose talents help to render Paris the most attractive capital of Europe. M. Carnot has also placed the Presidential box at the Grand Opera at the disposal of the delegates to the Sanitary Conference for the duration of their stay in Paris. The British delegates, I imagine, must regret that in London nothing so sumptuous and yet so refined could possibly be offered by the Government to its guests; on the other hand, they have doubtless

[1] THE LANCET, Feb. 17th, 1894.

entirely lost whatever illusion they may at first have entertained with regard to Republican simplicity. They have received something like eighty calls from foreign Ambassadors and various official personages. To return all these would be no slight task. This display of courtesy, these expressions of welcome, must be very gratifying; but they involve a considerable loss of time and very heavy physical fatigue. A little leisure, a little repose, would probably be very welcome; there is, however, scant prospect of either if the Conference is to finish its labours before Easter and in time to enable some of its members to attend the International Medical Congress which will shortly meet at Rome.

THE CHLOROFORM INVESTIGATIONS IN HYDERABAD.

WE have been officially requested by his Highness the Nizam's Government to publish the following letter:—

"To W. H. Gaskell, M.D., F.R.S.; L. E. Shore, M.D.; and H. A. Hare, M.D., Professor of Therapeutics; E. Q. Thornton, M.D., Demonstrator of Therapeutics, Jefferson Medical College, Philadelphia.

"Hyderabad, January, 1894.

"SIRS,—1. I am directed by his Excellency the Nawab Vikar-ul-Umra, Bahadur, to tender to you and to your assistants the cordial acknowledgments of his Highness the Nizam's Government for your experiments and reports on chloroform.

"2. In doing so the Minister considers it advisable, in the interests of his Highness the Nizam's Government, to review not only the circumstances which led to the appointment of the Hyderabad Chloroform Commission, but also the finished results of the Commission's as well as of your own researches, on all of which a large sum of money has been expended by this Government.

"3. The Chloroform Commission of 1889 was originated by Surgeon-Lieutenant-Colonel Lawrie. The object of the Commission was to determine whether or not chloroform has any direct action on the heart, and to set at rest the all-important question, on which the uniform safety of the patient under chloroform depends—'Is it right or wrong to take the pulse as a guide to the effect of chloroform?'

"4. It was necessary to settle this question once for all by experiments on animals, because the London school refused to accept as final the clinical statistics put forward for the late Professor Syme by his former pupil and house surgeon, Surgeon-Lieutenant-Colonel Lawrie, to prove that chloroform does not directly affect the heart, and the pulse-feeling during chloroformisation is the most common cause of accidental over-dosing. These statistics presented an unbroken record extending over forty years, from 1847 to 1889 (and it is still unbroken in 1894), of chloroform administered on Syme's principles *in England and in India*, without a death. Syme's principles are best stated in his own words: 'We are guided as to the effect, not by the circulation, but entirely by the respiration; you never see anybody here with his finger on the pulse while chloroform is given.'

"5. The researches of the Hyderabad Commission confirmed Syme's principles. The Commission proved that: (*a*) Chloroform and shock are incompatibles. It was found to be impossible to stop the action of the heart by any form of shock under chloroform. (*b*) In death by chloroform the respiration always stops before the heart, which beats effectively for a considerable time after the breathing has ceased. (*c*) The lowering of the blood pressure, which is produced by the narcotic action of chloroform, is harmless and cannot be due to weakening of the heart. (*d*) Chloroform anæsthesia is free from risk. As long as the breathing is natural and regular, and the inhalation is not continued after anæsthesia is complete, over-dosing with chloroform is impossible. (*e*) The pulse is never appreciably affected by chloroform, except through interference with the breathing or by over-dosing.

"6. The experiments of the Hyderabad Commission did not satisfy the profession. The Commission's evidence of the absence of direct heart-failure under chloroform was said to be wholly negative, and further experiments were rightly demanded in order to show the cause or causes of the fall of the blood pressure.

"7. These experiments were undertaken on behalf of his Highness the Nizam's Government by two of the greatest living authorities on physiology and physiological therapeutics, Dr. Gaskell in England and Dr. H. A. Hare in America. Dr. Gaskell was assisted by Dr. Shore, and Dr. Hare by Dr. E. Q. Thornton.

"8. The experiments of Drs. Hare and Thornton substantiated those of the Hyderabad Commission. They found that it is not possible—'in lower animals (the dog) to cause cardiac death by the freest use of chloroform by inhalation without first causing respiratory arrest.' And their report concluded in the following terms: 'We agree so heartily with Lawrie's conclusions (which are those of the Hyderabad Commission) that we print them below.'

"9. The value of Dr. Hare's report will more thoroughly be appreciated when it is remembered that it is directly opposed to the conclusions published only four years ago by himself and Professor H. C. Wood, of Philadelphia; and that it is also altogether opposed to the statement made by Professor Wood at the Berlin International Medical Congress in August, 1890: 'We definitely proved that in the dog chloroform has a distinct, direct paralysing influence on both respiration and circulation, and that in some cases the heart is arrested before respiration.'

"10. The fallacies of Professor Wood's experimental and clinical data were exposed in THE LANCET and in the Hyderabad Commission's Report on Chloroform (page 274) and it is satisfactory to note that the report of Drs. Hare and Thornton indicates that they have convinced themselves that the opinions of Professor Wood were founded on error.

"11. The cross-circulation experiments devised by Drs. Gaskell and Shore were new to chloroform research. They were of an excessively complicated character, so much so that the difficulties connected with their performance were underrated even by their authors. The cross-circulation experiments consisted of two series. The first series was conducted in the Physiological Laboratory at Cambridge by Drs. Gaskell and Shore. It is true that the deductions made by these gentlemen from their experiments led them to express opinions adverse to the conclusions of the Hyderabad Commission, but the credit for the application of cross-circulation experiments to chloroform investigation belongs exclusively to them. The second series, which was carried much further than the first, was completed in Hyderabad by Dr. Lawrie and Dr. Arthur Chamarette, assisted by students of the Hyderabad Medical School.

"12. The object of the cross-circulation experiments was to demonstrate the effects of sending chloroformed blood to the brain alone, or to the heart alone, and his Excellency the Minister is advised that in no other way could the question whether chloroform has a direct action on the heart or not be settled. The chief difficulty connected with the cross-circulation experiments—a difficulty so great as to be nearly prohibitive—consisted in the almost total impracticability of establishing and maintaining an efficient cross-circulation between two animals. When, however, after endless failures, this difficulty had been overcome and chloroform was sent to the heart alone, it produced no effect whatever; but when it was sent to the brain alone it produced its usual sequence of events—viz., lowering of the blood pressure, with, first, anæsthesia, then stoppage of the respiration, and then death.

"13. The cross-circulation experiments established the following facts in addition to those already made good by the Hyderabad Commission: (*a*) Chloroform has no direct action on the heart or circulation. The heart can only be affected under chloroform by interference with the breathing or by over-dosing, which is practically the same thing. Accordingly, it must be futile and dangerous to take the pulse as a guide to its effect. (*b*) The lowering of the blood pressure which is caused by an effective dose of chloroform is due entirely to its direct narcotic action on the brain and is a safeguard to the heart by dilating the smaller arteries and facilitating the flow of blood from the arterial to the venous system, thus diminishing its work and relieving it of strain. Syme's principles of chloroform administration are, therefore, physiologically correct, and there is no longer the shadow of an excuse for the impotent and dangerous 'finger on the pulse while chloroform is given."

"14. The Minister observes that Drs. Hare and Thornton express a fear lest, in certain diseased and enfeebled conditions of the heart, '*chloroform might be the last straw which upsets the cardiac balance*' and causes death. But it is clear that, the cross-circulation experiments having determined that chloroform has no direct action on the heart, it can make no difference as regards the direct effect of the

anæsthetic whether the heart is sound or unsound, strong or feeble. Moreover, as chloroform eases and lightens the heart's work, it is obvious that, in the case of a diseased or enfeebled heart, so far from upsetting the cardiac balance, the action of the anæsthetic must be advantageous. Provided, therefore, the breathing is in no way interfered with, chloroform must render a surgical operation, in the case of a patient with heart disease, infinitely safer than it would be if anæsthesia were not employed.

"15. It is evident, then, that the experiments devised by Drs. Gaskell and Shore have led to results of the most far-reaching and important kind and have placed the proofs that chloroform does not directly affect the heart on an unassailable basis; while the practical conclusion of these scientists—that 'chloroform can be given with perfect safety'—is the most valuable of all evidence of the enormous influence for good that has resulted from the Hyderabad Commission. The Minister is informed that this conclusion is in absolute accordance with the clinical results obtained at the Afzulgunj Hospital, where chloroform is given by students with uniform and perfect safety, solely because the inhalation is never allowed to interfere with the patient's breathing, and the heart is entirely disregarded as a factor in the administration.

"16. Under these circumstances his Excellency the Minister proffers his best thanks to Drs. Gaskell and Shore for their invaluable experiments and for the time and care they devoted to the work entrusted to them by his Highness the Nizam's Government.

"17. No less valuable are the researches of the American physicians. The Nizam's Government recognises to the fullest extent the difficulty Drs. Hare and Thornton had to encounter; and the Minister desires to express his personal admiration of the manner in which Dr. Hare fearlessly and frankly abandoned his previously conceived opinions when he had satisfied himself of the truth of the deductions of the Hyderabad Commission.

"18. In conclusion, I am to intimate to Drs. Gaskell and Shore, and to Drs. H. A. Hare and E. Q. Thornton, that in commemoration of their researches, and as a mark of the high appreciation by the Nizam's Government of their experiments and reports, the Minister begs their acceptance of a piece of silver plate which will be forwarded to each of them in due course."

We have been requested to publish the reply which Drs. Gaskell and Shore forwarded to Hyderabad on Feb. 13th:—

"To his Excellency the Nawab Vikar-ul-Mura, Babadur,
Prime Minister of his Highness the Nizam.

"SIR,—We beg through you to thank his Highness the Nizam's Government for their appreciation of the work we have done in connexion with the Hyderabad Chloroform Commission. We can assure you, on our part, that we feel it a great honour to have been invited to take a part in so important a scientific investigation as that initiated by his Highness the Nizam's Government. Our desire throughout has been to carry out our investigation in a scientific spirit by means of experiments on animals, approaching the question from the physiological point of view, entirely apart from clinical observations. Our primary object was to ascertain the cause of the fall of blood-pressure which usually accompanies chloroform anæsthesia, and our experiments show, in our opinion conclusively, that this fall of pressure is mainly due to a direct weakening action of chloroform on the heart. We do not feel that the subsequent experiments conducted by Surgeon-Lieutenant-Colonel Lawrie and Dr. Chamarette, referred to in the eleventh and twelfth paragraphs of your letter, so far as we can judge from an account of them that has been published, have caused us to change our opinion on this point. We consider, nevertheless, that the great value of the results of the Hyderabad Chloroform Commission in insisting upon the careful watching of the respiration during the clinical administration of chloroform still holds good, in spite of the results of our experiments as to the cause of the fall of blood-pressure.

"At the same time, we feel that it is due to his Highness the Nizam's Government that we should state that we, as physiologists, attach but little importance, in deciding the question of the action of chloroform on the heart, to the oft-reiterated observation of the Hyderabad Chloroform Commission that the respiration fails before the heart ceases to beat. From our knowledge of the nature of the nervous activity of the respiratory centre, and of the nature of the contractile activity of the heart, it is clear to us that the delicate nervous centre for respiration would be expected to fail—as it does in the majority of cases of death—before the heart actually ceases to beat, even though the muscular activity of the heart be impaired by the action of such a drug as chloroform. We therefore consider that the cessation of the respiration before the cessation of the heart's beat which occurs as the result of chloroform poisoning is of itself of no value in supporting the conclusion of Surgeon-Lieutenant-Colonel Lawrie that the chloroform does not directly affect the heart in any way.

"We have the honour to be, Sirs, your obedient servants,
W. H. GASKELL,
L. E. SHORE."

SANITATION IN WORTHING: THE HERMITE PROCESS.

(FROM OUR SPECIAL COMMISSIONER.)

WORTHING just now would afford an excellent opportunity to classes in public health for gaining valuable practical instruction on two vital subjects—water-supply and the treatment and engineering of sewage. The streets of the town give evidence of the steps that are in progress to remedy faulty sewers; in West-street the Hermite system of treating sewage is at work on a small scale, while the somewhat more remote operations for connecting up the supply of water from the new heading in the Downs at Findon, some three miles north of the town, as an auxiliary to the existing spring supply, are proceeding apace. Although the Hermite process has been working continuously for three weeks—a row of small cottages in West-street having been selected for the experiment—the council have been awaiting the arrival of M. Hermite in order to obtain his approval of the structural arrangements which have been carried out by the electrical engineers, Messrs. Paterson and Cooper, before inviting public inspection. M. Hermite arrived at Worthing on Monday last, and in the afternoon he explained his system before the mayor and the members of the council and many others interested in this new line of treatment. The demonstration was continued to-day (Tuesday), when several experts visited the scene of the operations. All who are interested in the process are now freely invited to inspect the installation. The general design of the experimental plant has already been described; but now that the process has been in operation for three weeks a short account of the salient features of the system, and a few observations on the result of the three weeks' trial, may be of interest. The Hermite system of sanitation is based, it may be remembered, on the use of what is declared to be a very powerful disinfectant liquid obtained by submitting sea-water, or a solution of common salt and chloride of magnesium, to the action of a current of electricity in a machine called the "electrolyser." The magnesium chloride is alone decomposed, the chemical affinity between the positive element magnesium and the negative element chlorine being distinctly weaker than that existing between the elements of common salt; but the undecomposed sodium chloride serves as an electrical conductor. The exact nature of the changes produced in sea-water by this treatment is not perfectly understood, but it is well known that when a current of electricity is passed through a solution of common salt (NaCl), which is divided loosely into two columns of liquid by a diaphragm of parchment, or, if the experiment be performed in a V-tube, with an electrode in each limb, caustic soda appears at the negative pole, and chlorine at the positive. These products, however, if left to diffuse would combine, according to the equation $2\,NaOH + Cl_2 = NaClO + NaCl + H_2O$, and form sodium hypochlorite. This is probably what takes place in the electrolyser of M. Hermite, except that hypochlorite of magnesium is formed which yields its chlorine more readily than the corresponding sodium salt. The action, however, is not so seemingly simple, since other bodies of a powerfully oxidising nature are invariably associated with the electrolytic products. The Hermite fluid has a slight but not unpleasant chlorous odour, it is said to be neutral to test paper, and rapidly displaces iodine from potassium iodide. It possesses distinct bleaching properties, and this fact introduces some doubt as to whether the process is applicable to inland towns since the discharge of a chlorinated liquor into rivers would most probably prove fatal to fish. The electrically treated sea-water, the strength of which is regulated by the rate of flow

through the electrolyser, is pumped into elevated tanks, from which the water-closets of the cottages in the row in West-street are supplied. The closet evacuations flow first into an intercepting syphon, and this, it appears to me, is an essential feature in the system, inasmuch as it is claimed that all accumulated solids are gradually disintegrated and dissolved by the passage of a constant supply of electrolysed sea-water through the syphon. There was an accumulation of paper and soap and other sewage concomitants in this syphon, which represented, I was told, the product of three weeks' use of the sewer. The quantity of deposit was certainly considerably less than one would expect to find in the case of untreated sewage, while it was quite free from fecal odour. It is even advanced that such things as paper are gradually broken up by the modified sea-water. In an interview with M. Hermite, which he freely accorded me, I expressed myself somewhat incredulous on various points. His replies are of interest. Thus, on the question of the possible injurious action of the fluid on service pipes and reservoirs, he said that it has a preliminary action on iron, which, however, is soon arrested by the protective crust of oxide first formed. In bleaching factories all the machinery is of iron, and it shows little or no deterioration after several years' use. It would be possible, he added, to use earthenware or cement pipes; but they were absolutely unnecessary, for he was prepared to guarantee that tarred iron pipes would prove satisfactory. The pipes and tanks used in the experiment at West-street were of galvanised iron, and after some time they would be found to be coated with a protective layer of magnesic oxide. On the question of cost M. Hermite said that to supply the inhabitants of Worthing with not merely enough water for the closets, but also for domestic use—to enable them to have, in fact, a disinfectant to use for washing floors, sick chambers, and so on—would cost about one shilling per head per annum of the population; that would mean about forty litres (nearly nine gallons) per head per day. But for closets only, leaving a margin for town purposes, it would cost about sixpence per head per year of the population. He has prepared statistics, he assured me, dealing with the cost of installation and maintenance, which will be issued in pamphlet form in a week or so. The system, he claims, would be more effectual and scientifically complete if the fluid were supplied to the houses rather than if periodical flushing of the sewers were resorted to, besides which, storm water would have no effect upon it. In reply to the question as to whether free chlorine or a solution of ordinary bleaching powder would be as effective, M. Hermite said it would not, and further added that it would cost four times as much as treating sea-water electrically. In order, however, that an independent conclusion may be drawn on some of the points at issue, I have obtained, with my own hands, the samples indicated below, which M. Hermite permitted me to to take whenever and wherever I chose, with the view of submitting them to examination and analysis in THE LANCET Laboratory. Thus, the analysis of the deposit found in the pipes and tanks may give some clue to the action of the fluid on metal pipes. The analysis of the electrolysed sea-water taken from the flushing cisterns will furnish the strength of the fluid as regards its available chlorine, while an analysis of the effluent will indicate what favourable changes are effected in the composition of the sewage and give some measure of the purifying powers of the system. A bacteriological examination is desirable also to ascertain the antiseptic and disinfectant properties of the electrolysed sea-water and its bacterial effect on sewage. Until these things are done judgment must be reserved. Sir Henry Roscoe and Dr. Armand Ruffer have undertaken a scientific inquiry on the lines above indicated on behalf of the British Institute of Preventive Medicine. In the meantime it may be added that while several experts believe that the system possesses distinct scientific merit and value, yet they hesitate to give an opinion as to whether its application on a large scale is practicable.

In regard to the water-supply, as was indicated in a former communication, the confidence of the inhabitants of Worthing in the water that is now provided in the services is rapidly being restored, and the tanks which were placed in the streets as a temporary source of supply have been removed. This is due in a great measure to the reassuring report of Dr. Klein, recently issued, on four samples of water taken at various points. The result of the bacteriological examination of all the specimens was that in subculture none of them presented the fundamental cultural characters exhibited by the bacillus coli or the bacillus of typhoid fever, and Dr. Klein thinks it justifiable to conclude that those two species were not present in 1600 c.c. of either of the four samples. In addition to the springs which were struck soon after the epidemic broke out, and which were connected subsequently with the mains after they were cleansed with strong lime solution, a new heading has been driven still further away from the town at Findon, about three and a half miles to the north. Here there is an abundant flow of pure, good water, and every effort is being made to connect this with the system of service pipes.

The past has been a bitter experience to the borough authorities, of which the present is now reaping the excellent fruit. Sanitary precautions are being taken with admirable zeal on every hand, and a word of praise and encouragement is due to the authorities, who are straining every nerve to free the town from all reproach.

Worthing, Feb. 28th.

BLOXHAM v. MEDICAL DEFENCE UNION.

THIS was a motion by the plaintiff, Mr. S. C. Bloxham, a member of the Medical Defence Union, for an interlocutory injunction to restrain the Union from undertaking the defence of Dr. Collie, another member of the Union, between whom and Mr. Bloxham a legal dispute was and, we believe, is pending. The plaintiff asked for the injunction upon the broad ground that the Union, in espousing the cause of one of its members in a legal dispute with another member, was acting beyond the scope of its memorandum and articles of association, which did not permit it to spend money in that manner. He also raised as a subsidiary point that the action of the defendants constituted unlawful maintenance. The Union relied upon the following clauses in their memorandum and articles of association as a justification of their intended interference in Dr. Collie's behalf:—"To advise and defend or assist in defending members of the Union in cases where proceedings involving questions of professional principle or otherwise are brought against them" (one of the objects of the Union as stated in Clause 3, Section 3, of the memorandum). "The Council may, after due investigation, undertake the conduct or defence of, or assist in conducting or defending, any proceedings, whether of a strictly legal nature or otherwise, concerning or affecting any member of the Union who may desire their assistance, provided that the cause of action or the proceeding have not arisen or been commenced prior to the date of the commencement of his membership of the Union; and provided also that such member give a written undertaking to abide absolutely by the decision of the Council as to the conduct or defence of the case. The Council may also appoint one or more arbitrators, either from their own body or from among the members of the Union or otherwise, for the settlement of professional difficulties and disputes in which any member of the Union desiring the assistance of the Union may be concerned." (Powers of the Council, as defined in Section 39 of the Articles.) Mr. Justice Chitty declined to make any order except that the costs be costs in the action, as he did not hold that any misapplication of the funds of the defendant corporation had been established; neither in the clause of the memorandum nor in that of the articles upon which the Union relied was the assistance offered to members limited, even by implication, to actions brought against outsiders. A suggestion made by the counsel for the plaintiff that the assistance of the Union amounted to an unlawful maintenance of another man's litigation also could not be entertained. In declining to grant an interlocutory injunction, Mr. Justice Chitty mentioned the position in which such an injunction would place Dr. Collie as constituting a peculiar feature in the case; for Dr. Collie had, in accordance with the articles of the Union, given an undertaking to abide absolutely by the decision of the Council as to the conduct of his impending case against the plaintiff, so that an injunction of the Union would embarrass his case.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6286 births and 4002 deaths were registered during the week ending Feb. 24th. The annual rate of mortality in these towns, which had declined in the preceding six weeks from 28·5 to 18·7 per 1000, rose again last week to 20·0. In London

the rate was 20·0 per 1000 and corresponded with the mean rate in the thirty-two provincial towns. The lowest rates in these towns were 12·2 in Portsmouth, 14·6 in Derby, 16·5 in Cardiff, 16·6 in West Ham, and 16·8 in Gateshead; the highest rates were 24·8 in Liverpool, 25·5 in Plymouth, 25·7 in Preston, 26·5 in Burnley, and 29·4 in Wolverhampton. The 4002 deaths included 476 which were referred to the principal zymotic diseases, against 432 and 423 in the preceding two weeks; of these, 163 resulted from whooping-cough, 111 from measles, 84 from diphtheria, 43 from scarlet fever, 40 from diarrhœa, 23 from "fever" (principally enteric), and 12 from small-pox. No fatal case of any of these diseases occurred last week in Halifax; in the other towns they caused the lowest death-rates in Brighton, Portsmouth, and Gateshead, and the highest rates in Salford, Birkenhead, Plymouth, West Ham, and Wolverhampton. The greatest mortality from measles occurred in Wolverhampton, Leicester, Birkenhead, and Salford; from scarlet fever in Burnley and Sunderland; and from whooping-cough in Sheffield, Swansea, Cardiff, Bolton, and Plymouth. The mortality from "fever" showed no marked excess in any of the large towns. The 84 deaths from diphtheria included 42 in London, 11 in West Ham, 7 in Manchester, and 4 in Salford. Four fatal cases of small-pox were registered in Birmingham, 3 in West Ham, 2 in London, 2 in Bristol, and 1 in Nottingham; but not one in any other of the thirty-three large towns. There were 81 cases of small-pox under treatment in the Metropolitan Asylum Hospitals and in the Highgate Small-pox Hospital on Saturday last, the 24th ult., against 82, 77, and 78 at the end of the preceding three weeks; 18 new cases were admitted during the week, against 15 and 17 in the preceding two weeks. The number of scarlet fever patients in the Metropolitan Asylum Hospitals and in the London Fever Hospital, which had been 2491, 2387, and 2270 at the end of the preceding three weeks, had further declined to 2181 on Saturday last; 180 new cases were admitted during the week, against 224 and 199 in the preceding two weeks. The deaths referred to diseases of the respiratory organs in London, which had declined from 762 to 340 in the preceding six weeks, rose again to 408 last week, but were 89 below the corrected average. The causes of 76, or 1·9 per cent., of the deaths in the thirty-three towns were not certified, either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Brighton, Portsmouth, Newcastle-upon-Tyne, and in four other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, Sheffield, and Hull.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had declined in the preceding three weeks from 21·0 to 19·2 per 1000, rose again to 20·6 during the week ending Feb. 24th, and was 0·6 per 1000 above the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 9·6 in Paisley and 19·2 in Greenock to 24·2 in Dundee and 30·8 in Perth. The 588 deaths in these towns included 45 which were referred to whooping-cough, 12 to diphtheria, 7 to diarrhœa, 4 to scarlet fever, 4 to "fever," 1 to measles, and not one to small-pox; in all, 73 deaths resulted from these principal zymotic diseases, against 74 and 67 in the preceding two weeks. These 73 deaths were equal to an annual rate of 2·6 per 1000, which slightly exceeded the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of whooping-cough, which had been 28 and 35 in the preceding two weeks, further rose to 45 last week, of which 25 occurred in Glasgow, 6 in Edinburgh, 5 in Aberdeen, and 4 in Leith. The deaths referred to diphtheria, which had been 17 and 9 in the preceding two weeks, rose again to 12 last week, and included 9 in Glasgow and 2 in Dundee. The 4 deaths referred to different forms of "fever," showed a slight further decline from those recorded in recent weeks and included 2 in Glasgow. The fatal cases of scarlet fever, which had been 11 and 8 in the preceding two weeks, further fell to 4 last week, of which 3 occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 121 and 122 in the preceding two weeks, further rose to 127 last week, but were 8 below the number in the corresponding week of last year. The causes of 51, or more than 8 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 33·1 and 33·3 per 1000 in the preceding two weeks, declined again to 29·2 during the week ending Feb. 24th. During the past eight weeks of the current quarter the death-rate in the city has averaged 32·8 per 1000, against 21·7 in London and 18·9 in Edinburgh. The 196 deaths in Dublin during the week under notice showed a decline of 27 from the number in the preceding week and included 14 which were referred to the principal zymotic diseases, against 21 and 23 in the preceding two weeks; of these 14 deaths, 5 resulted from whooping-cough, 5 from "fever," 2 from measles, 2 from diarrhœa, and not one either from small-pox, scarlet fever, or diphtheria. These 14 deaths were equal to an annual rate of 2·1 per 1000, the zymotic death-rate during the same period being 2·6 in London and 1·9 in Edinburgh. The fatal cases of whooping-cough, which had been 8 and 10 in the preceding two weeks, declined again to 5 last week. The deaths referred to different forms of "fever," which had been 4 and 3 in the preceding two weeks, rose again to 5 last week. The 2 fatal cases of measles were within one of the number in the preceding week. The 196 deaths registered in Dublin last week included 27 of infants under one year of age and 60 of persons aged upwards of sixty years; the deaths both of infants and of elderly persons were below those recorded in the preceding week. Five inquest cases and 5 deaths from violence were registered; and 71, or more than a third, of the deaths occurred in public institutions. The causes of 12, or more than 8 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

MOVEMENTS OF THE MEDICAL STAFF.

THE following officers have arrived from India in the *Malabar*: Surgeon-Lieutenant-Colonel Fawcett and Surgeon-Captains Barefoot and Donaldson. Brigade-Surgeon-Lieutenant-Colonel Hughes and Surgeon-Captain Greig have arrived at the Straits Settlements. The following officers have embarked in the *Euphrates* for India: Brigade-Surgeon-Lieutenant-Colonel Gunning and Surgeon-Lieutenant Stalkartt. Surgeon-Captain Hallaran has been posted to Netley on return from foreign service. Surgeon-Major M'Laughlin has been transferred from Woolwich to Glasgow. The following officers have joined at Aldershot from Netley to undergo instruction in ambulance drill: Surgeon-Lieutenants Anderson, Browning, McMunn, Master, Prynne, Green, Clark, Boyle, Bennett, Simpson, Fox, Fleury, Tibbits, and Cameron. Brigade-Surgeon-Lieutenant-Colonel Holmes has been posted to the Royal Infirmary, Dublin, and Surgeon-Captain Bate to Ireland. Surgeon-Captain S. E. Duncan, A.M.S., having embarked for Cyprus on the 9th ult., is struck off the Netley strength from the 10th ult. Surgeon-Captain W. Hallaran, A.M.S., having joined at this station, is posted to the Surgical Division of the Royal Victoria Hospital for duty, and to No. 4 Company Medical Staff Corps as Subaltern.

INDIA AND THE INDIAN MEDICAL SERVICES

The Viceroy and Governor-General has made the following appointments on his personal staff: to be Honorary Surgeons: Surgeon-Major-General A. F. Bradshaw, C.B., A.M.S.; Surgeon-Colonel A. C. Gaye, A.M.S.; Surgeon-Colonel G. C. Chesnaye, I.M.S.; Surgeon-Colonel R. Harvey, M.D., D.S.O., I.M.S.; Brigade-Surgeon-Lieutenant-Colonel D. O'C. Raye, M.D., I.M.S.; Brigade-Surgeon-Lieutenant-Colonel D. D. Cunningham, M.B., C.I.E., I.M.S.; and Surgeon-Lieutenant-Colonel A. J. Wilcocks, M.D., I.M.S. The following appointments are announced: Surgeon-Captain A. W. T. Buist-Sparks, Officiating Resident Surgeon of the Eden Hospital, Calcutta, temporarily to act as Civil Surgeon of Palamau. Surgeon-Captain B. H. Deane to act as Deputy Sanitary Commissioner, Northern Bengal Circle until further orders. Surgeon-Major J. B. Gibbons, Police Surgeon, to be an Official Visitor of the Presidency Gaol. Surgeon-Major J. W. Evans to act as Superintendent, Lunatic Asylum, Madras. Surgeon-Major J. C. Marsden to be District Surgeon, Rajahmundry, sub *pro tem.* Surgeon-Captain W. C. Vickers, M.B., M.C., to be Civil Surgeon, Coconada, sub *pro tem.* Surgeon-Captain J. B. Jameson, M.B., C.M., to act as Civil Surgeon, Jacobabad, in addition to his own

duties. The services of Brigade-Surgeon-Lieutenant-Colonel A. Cameron M.D., Civil Surgeon of Benares, are placed temporarily at the disposal of the Military Department.

NAVAL MEDICAL SERVICE.

The following appointments are notified: Staff-Surgeon Robert Bentham, to the *Raleigh*. Surgeons: Daniel J. P. M'Nabb and Christopher L. W. Burton, to the *Raleigh*; Samuel W. Johnson, M.B., to the *Impregnable*; Geo. B. D. Levick, Morris C. Langford, Percy H. Boyden, M.B., and Henry N. Stephens, to the *Victory*, additional; Alfred H. Jeremy, B.A., M.B., to Plymouth Hospital; Thos. D. Halsham, B.A., M.B., to the *Pembroke*; James P. Willis, M.B., to the *St. Vincent*, additional; Walter R. Knightly, to the *Excellent*, additional; Edward A. Rogers, to the *Vivid*, additional; Arthur Gaskell, to the *Excellent*, additional; and J. D. Menzies, to the *Euphrates*.

VOLUNTEER CORPS.

Artillery: 2nd Middlesex: Surgeon-Lieutenant-Colonel J. W. Barnes resigns his commission; he is permitted to retain his rank, and to continue to wear the uniform of the Corps on his retirement.—4th West Riding of Yorkshire (Western Division Royal Artillery): Surgeon-Lieutenant H. Lockwood resigns his commission.—*Rifle:* 3rd Volunteer Battalion, the Queen's (Royal West Surrey Regiment): Campbell Boyd, Gent., to be Surgeon-Lieutenant.—2nd Volunteer Battalion (the Suffolk Regiment): Surgeon-Lieutenant E. G. Barnes, M.D., resigns his commission.—3rd Volunteer Battalion (the Bedfordshire Regiment): Surgeon-Major H. F. Holland, M.D., to be Surgeon-Lieutenant-Colonel.—3rd Volunteer Battalion, the Queen's Own (Royal West Kent Regiment): Surgeon-Major W. R. Smith, M.D., to be Surgeon-Lieutenant-Colonel.—2nd (Berwickshire) Volunteer Battalion, the King's Own Scottish Borderers: Jas. Marr, M.B., to be Surgeon-Lieutenant.

VOLUNTEER MEDICAL STAFF CORPS.

The London Companies: Surgeon-Captain D. Power, M.B., resigns his commission; Howard Decimus Buss, Gent., to be Surgeon-Lieutenant.

ARMY PHARMACY.

A small committee is to assemble in Calcutta for the purpose of drawing up suggestions for a revised edition of the British Pharmacopœia, with a view especially to eliminating from compound medicines all articles of an inert character or possessing little or no therapeutic value. It has often been a matter of surprise to us, considering the great importance of reducing the number and bulk of drugs and medicines taken on field service, that compressed medicines are not utilised more than they appear to be in the public medical services. The subject has been frequently adverted to by medical officers and others. On field service in times of war, when soldiers are subjected to careful medical inspection beforehand, and are at once sent from the front to hospitals in rear if at all seriously sick or wounded, the number and amount of drugs and appliances really required with a fighting force are relatively small. A reduction in this direction, and the substitution of the more active and compressed preparations of the present day for the bulky drugs and compounds in ordinary use, seem to be a desirable reform if it could be effected. Surgeon-Colonel R. Harvey has been nominated as the president, with the senior medical officer, British troops, and the medical storekeeper at Calcutta, as members of the committee to assemble there.

BRITISH AND INDIAN MEDICAL SERVICES COMPETITIVE EXAMINATION.

The following is a list of successful candidates for commissions in the Medical Staff of Her Majesty's Army at the recent examination in London:—P. Evans (2849), J. P. Silver (2462), J. M. Buist (2391), H. W. Vaughan Williams (2390), J. Walker (2365), T. E. Milner (2360), S. W. Sweetman (2860), F. Dove (2345), C. K. Morgan (2282), and G. H. C. Thom (2178). The following gentlemen successfully passed the recent examination for the Indian Medical Service:—G. Ramsay (3120), D. W. Sutherland (2754), W. Selby (2606), H. J. K. Bamfield (2604), W. D. Hayward (2565), A. H. Moorhead (2475), T. A. Granger (2470), H. M. Moore (2462), A. W. F. Russell (2384). D. C. Johnston (2304), C. R. Pearce (2304), J. W. Grant (2294), V. B. Bennett (2246), and W. E. Scott-Moncrieff (2192).

THE NAVAL MEDICAL SERVICE IN WEST AFRICA.

We may mention in connexion with the late reverse in West Africa, when Fleet-Surgeon White was wounded in the expedition against Fodi Silah, that this officer has in consequence to be relieved. Fleet-Surgeon W. R. White, B.A., M.B., of the *Raleigh*, entered the Royal Navy in 1871, became a staff-surgeon in 1883 and a fleet-surgeon in 1892. He was appointed to the *Raleigh* in September, 1891, and will be relieved by the surgeon of H.M.S. *Colossus*. The steamship *Pembroke Castle* is to proceed to Bathurst with a Royal Marine detachment and seamen, and will embark at Plymouth Staff-Surgeon Bentham, and Surgeons McNabb and Bunton, together with sick-berth stewards and attendants. According to the latest intelligence, there appears to have also been some fighting at Bathurst, and the British force at that place is to be strengthened by troops from Sierra Leone and Royal Marines from the Cape.

UNIVERSITY FELLOWSHIPS.

Surgeon-Major H. W. B. Boyd, F.R.C.S.Irel., Surgeon-Colonel D. E. Hughes, M.D., F.R.C.S.Edin., and W. Kay, M.D., have been nominated to be Fellows of the University of Bombay. Surgeon-Lieutenant-Colonel Gerald Bomford, M.D. Lond., Principal of the Calcutta Medical College, has been appointed a Fellow of the Calcutta University.

H.M.S. *Malabar* arrived at Portsmouth on the 22nd ult. with forty-seven patients for Netley.

Correspondence.

"Audi alteram partem."

"AERIAL CONVECTION OF SMALL-POX FROM HOSPITALS."

To the Editors of THE LANCET.

SIRS,—Regarding Dr. Sisley's queries as to what he calls my "conclusions" on this subject, I have to premise that they only purport to be of a very tentative and provisional character. They are governed generally by the introductory reservation "Summing up the evidence, so far as it is possible to sum up on a subject as to which so much is still to be learned"; and again, "In endeavouring to summarise the agencies which have to do with this result (aerial convection), it is necessary to bear in mind that other unknown agencies may also be involved, and that sometimes the joint action of all the known agencies may not be necessary, special activity of some, perhaps, atoning for relative deficiency, or absence, and *vice versâ*, of others." In particular, as to the "conclusion" which troubles him most, what I have said in the body of paper my is as follows: "In view of such facts, it is obvious that there is still much to learn regarding the whole question, and it is open to us to speculate whether the rhythm of epidemic and non-epidemic periods includes, as by analogy we may easily believe it to include, shorter rhythms of ebb and flow of infectivity, having to do not with whole seasons, but with weeks or days." This possible agency would, however, have been better and more clearly stated had it been numbered by itself, and not classed as subdivision (*c*) of (1). These extracts appear to me to contain the answer to Dr. Sisley's question, "Does Dr. McVail mean to imply that there are, or may be, facts about the method of spread of small-pox of which we are ignorant?" Speaking not as "we," but for myself only, most undoubtedly such ignorance is exactly what I do mean to imply, and indeed I not only imply it, but I state it. The facts of which I speak above are simply as referred to in my paper. The meteorological conditions (as to whose probable influence Dr. Sisley agrees with me) which twice previously at Fulham, and also in Waterhouse's experience in the last century, had seemed to determine the occurrence of an outburst (lasting not for months or weeks, but only for days), recurred subsequently within the special area. Yet at Fulham, even with an increased number of acute cases in the hospital, no similar outburst followed such recurrence. Therefore, bearing in mind that rhythm is a law of nature, and that this law is applicable to individual cases of disease, and especially of infectious disease, and that, indeed, epidemics are themselves examples of the law, it seems to be no very far-fetched suggestion that possibly—as there are always rhythms within rhythms, lesser within greater, shorter within longer—the differences in

the observed phenomena of aerial convection (assuming that the aerial theory is correct) might partly depend on temporary conditions of ebb or flow of infectivity. Both in its shortness of duration and in its excess of flow, a "spring tide" struck me as not an inapt simile for the special outbursts; but "The nautical[1] analogy," says Dr. Sisley, "does not help" him. I am sorry. The literature of the subject is full of references to epidemic "waves," and such terms certainly have been useful in my own reading—or, at least, I have imagined so.

Dr. Sisley says I have "Brought no evidence to show that the virus is more intense at the beginning of an epidemic." That is undoubtedly so; indeed, I am inclined to believe that the virus is usually less intense then. I spoke, however, not of the "beginning of an epidemic," but of "a rising epidemic," which is quite a different thing. As for the facts, they may not belong to every outbreak[2] everywhere; but those to which I referred are contained in Mr. Power's Reports, regarding which I had said in an earlier part of my paper: "I am assuming that the members of the Epidemiological Society are well acquainted with the general lines of the Fulham investigation." The special outbursts *did* occur during the rise of the epidemics. Here, again, is it allowable to go back to first principles? All nature is most active and vigorous in its spring time, man and animals in theirs, and why not the contagia of infectious diseases? Next, as to the "concentration of acute cases as centres of infection," Dr. Sisley presumes that all I mean is "that the worse the cases are, and the more there are of them in a given place, the greater will be the amount of infective matter in that place." But this is not exactly all that was in my mind. In these days of investigation regarding attenuation and intensification of virus, one thinks of something more than a mere adding of vesicle to vesicle and pustule to pustule as sources of variolous infection, and it is not easy to read Dr. Thompson's suggestive article in Stevenson and Murphy's "Hygiene" or Dr. Sweeting's paper on Post-Scarlatinal Diphtheria[3] without being led to speculate (for it is only speculation) whether the aggregation of acute cases of small-pox in a hospital ward or elsewhere may not result in "an altered quality or increased potency," rendering the disease "more readily transmissible and more easily diffusible." (To save critical comment, let me say that I am not complimenting Dr. Thompson and Dr. Sweeting, or hinting that they were the first to write on this subject.)

What I meant with reference to Haygarth and the atmospheric conveyability of moist small-pox matter was that moist matter could not well become disengaged from its source and get into the atmosphere. As it stands in my paper the statement is so brief as to be hazy, but if Dr. Sisley will turn to Stevenson and Murphy's "Hygiene," vol. ii., p. 400, he will see that I referred to an experiment in which a number of children were set round a small table, on the centre of which was placed a dossil of cotton soaked in variolous pus constantly renewed. Finally, as to a curious assumption made by Dr. Sisley on a very trifling point, I did not say that Dr. Whitelegge was the first to call attention to the matter with which I associated his name, and I cannot even see that I implied it. As a matter of fact, my reason for mentioning his Milroy lectures was the very opposite; it was because they contained, so far as I knew, the *latest*, and not the earliest, exposition of the point in question. I am obliged to Dr. Sisley for giving me the opportunity of trying to clear up (though even yet there is no lack of fog) some points which seem to have been left in specially Cimmerian darkness, but at the same time an apology is due to you for this letter having run to such unexpected length.

I am, Sirs, yours truly,

Glasgow, Feb. 27th, 1894. JOHN C. MCVAIL.

'THE NATURE AND TREATMENT OF ASPHYXIA NEONATORUM."

To the Editors of THE LANCET.

SIRS,—In reading Dr. Alexander Morison's interesting paper on the above subject I cannot help feeling that there are one or two points in the physiology of asphyxia neontorum which might bear a little speculative reflection. What, for instance, is the condition of the trachea in an infant who has never breathed? One cannot conceive that the trachea is filled to the glottis with fluid, for were this so the first inspiration would inhale a tracheaful of mucus into the bronchi and inevitably produce suffocation. Still less can one imagine the trachea to contain air. The most probable condition is that the two surfaces of the trachea are in contact, or separated only by a small quantity of mucus. The posterior muscular wall is flaccid enough to admit of its apposition to the curve of the cartilage, and the first inspiration separating the surfaces permits the access of air to the lungs. Now, supposing the child to be born semi-asphyxiated—that is, to have made no initial effort at inspiration—Sylvester's method is, as I have found it, in many cases useless and, if practised, does no more than draw up the abdominal contents into the thorax. And the reason for this is quite plain, for inasmuch as, the glottis being closed, there is no air in the trachea, the air pressure on the glottis is no greater than on any other part of the chest, and consequently there is no inducement for air to enter the lungs. This, however, is entirely changed should a voluntary inspiration have taken place and the trachea become patent, for then no more satisfactory method than Sylvester's could be devised. Hence the *raison d'être* of placing the mouth of the operator to that of the child and more or less forcibly inflating the chest, although it is true that the stomach often becomes inflated at the same time. Acting on this suggestion I find no better method of commencing artificial respiration in an infant moribund from asphyxia than intubation with a catheter carefully performed, for when the chest is once inflated it is easy to carry on respiration on Sylvester's lines.

I am, Sirs, yours truly,

Cheniston-gardens, W., Feb. 28th, 1894. E. A. BARTON.

"THE CORONER'S COURT."

To the Editors of THE LANCET.

SIRS,—It is inevitable that a medical coroner should occasionally offend some of his brethren. Dr. Love's letter, in THE LANCET of Feb. 10th, is a case in point. He is called on Jan. 31st to a man who has cut his throat at Mitcham, attends to him, and orders his removal to Croydon Infirmary. On Feb. 3rd the man dies, having been for the last three days of his life under the care of Mr. Wilson, the superintendent of the infirmary. Then arises a nice question, Which medical man shall be summoned to the inquest? Alas, in such a simple case the coroner cannot call both. He calls impartially the practitioner who is, in his opinion, best able to help the jury to ascertain the actual cause of death—viz., the infirmary superintendent. Whereat Dr. Love writes off to you that he has "a grievance"; that the coroner "has not dealt justly with him," &c. But if the coroner had summoned Dr. Love he would have given "a grievance" to Mr. Wilson, who in his turn would have wanted to "air his grievance" in your columns, and to show how the hard-worked Poor-law medical officer "does not receive much consideration even from those who ought to know better." Not long since one man knocked another down. A medical man was called, who ordered and superintended the injured man's removal to the hospital, where he died shortly after admission. As the case was manifestly one of manslaughter or murder, and desiring to have the evidence as complete and accurate as possible, I ordered the medical man to make a post-mortem examination and attend the inquest; but, being on very friendly terms with him, I suggested—and he cordially accepted the hint—that the house surgeon should be invited to join him in making the examination, and that the fee of two guineas should be divided between them, though the house surgeon was entitled to no fee. When my officer invited the house surgeon to join the medical man in the mortuary, he not only refused to attend, but was highly offended and reported the matter to the hospital committee, as though I had been guilty of a grave offence in sending a gentleman not on the hospital staff to examine a corpse lying in their mortuary. This case, read in conjunction with Dr. Love's, shows how impossible it is to please everybody, and how ready some people are to discover a grievance and to blame a coroner. In all similar cases all that can be reasonably required of a coroner is that he shall act impartially and call before him the surgeon who, from his knowledge of the circumstances, seems to be best able to help the jury in their inquiry.

In THE LANCET of Feb. 3rd there is a note on "Inquest Fees," to the effect that the Croydon county court judge

[1] Why "nautical"? Spring tides are independent of sailors and ship

[2] E.g., Oldham?

[3] Transactions Epidemiological Society, vol. xii.

ruled that medical officers of workhouse infirmaries were not entitled to fees for post-mortem examinations and for attending inquests. True; but Mr. Poland, Q.C., has expressed a contrary opinion. Consequently, when, some time ago, our infirmary superintendent demanded a fee for attending an inquest, I gave it him, with the proviso that he should return it if the expense were disallowed by the Recorder. I laid the matter before the town clerk—a solicitor—and the Recorder, and received in due course a reply that such fees would be allowed in future. And I have gladly paid them from that time. This may be a useful hint to medical officers of infirmaries in other parts of the country.

I am, Sirs, yours sincerely,

THOMAS JACKSON, Coroner for Croydon.

Thornton Heath, Feb. 20th, 1894.

"MORTALITY FROM CANCER."

To the Editors of THE LANCET.

SIRS,—Dr. Lyon is so well acquainted with insurance matters that I am sure he will pardon my pointing out that he has missed the point of the argument of Mr. King and Dr. Newsholme drawn from comparison of male and female mortality rates.

To prove a real increase in mortality there should be a more than proportional increase in female as compared with male mortality rates. Taking the Irish curve, which is probably the least reliable and certainly the most unfavourable to the argument, there is a slight divergence for fourteen years and convergence or parallelism for seventeen years; but if we take the figures on which the curve is based, we find the difference is very slight, even between the two ends of the period. Male mortality rates have increased 48·5 per cent., female 49·3 per cent.—quite insufficient to base thereon a theory of "alarming increase" in cancer mortality. In the English and Scotch figures the proportional increase in male is nearly double that in female mortality rates, thereby strongly supporting the theory that the increase is mainly fictitious.

I am, Sirs, yours truly,

Feb. 26th, 1894. F. R. WALTERS.

"EXPERIMENTAL DEGENERATION OF THE PYRAMIDAL TRACT."

To the Editors of THE LANCET.

SIRS,—I, like Professor Boyce, wish that there should be "no mistake as to the points at issue" between Professor Horsley and myself. I claim: (1) that Professor Horsley should have written to me in October last when he wished to know whether I was carrying on the research in question; and (2) that, not having done this, he should have refrained from making imputations against me, both in public and in private, until he had learned my side of the question, and was in consequence in a position to judge of the truth of the matter. The facts of the matter, if I may be allowed to state them, are shortly these. I commenced work on "pyramidal degenerations" as long ago as 1885. In the spring of last year I resumed work on the "thumb centre." In October last I explicitly stated to Professor Boyce that I was doing so, as appears from his letter subjoined. Professor Boyce was on that occasion, as Professor Horsley states, the messenger of the latter. After that date similar work was started in Professor Horsley's laboratory, where Professor Boyce is assistant. The results of that work were sent in for publication in December last (Professor Boyce now tells us) without any notification to me. On Feb. 3rd a note of my work appeared in THE LANCET. Thereupon Professor Horsley complains, and Professor Boyce now says that he misunderstood the conversation of last October between him and me.

On Feb. 15th of this year, in the presence of Mr. Shattock, who took notes of the conversation at the time, Professor Boyce stated: (1) that when he asked me in October whether I was working at pyramidal degenerations from the "arm centre" I frankly replied in the affirmative; (2) that he believed the similar work at University College Pathological Laboratory was started after our conversation in October; and (3) that the work was pressed on there with very great urgency. Moreover, I received from Professor Boyce a letter dated Jan. 31st, 1894, in the following terms: "My dear Sherrington, thanks extremely for the courtesy which prompted you in writing your note. A long time ago—that is, just before I had a conversation with you at the Physiological Society's meeting (October, 1893) about the work Mellus was going to do—in a conversation I had with Horsley, the latter reminded me to ask you whether you had started your work. ..... As you informed me at the time you had commenced work some time, and were then working, you, of course, have priority." It is clear that most of the work in Professor Horsley's laboratory has been done since October, otherwise he would have been doing exactly that of which he accuses me. Most of my work was done before October. If, therefore, either of us has a grievance, it is certainly not Professor Horsley.

I am, Sirs, yours faithfully,

C. S. SHERRINGTON.

Physiological Laboratory, St. Thomas's Hospital, S.E., Feb. 27th, 1894.

To the Editors of THE LANCET.

SIRS,—In common, probably, with most of your readers it seems to me that discussions on matters such as the above-mentioned are best settled by submitting all the facts to impartial judges. To this end I last week proposed that three arbitrators chosen from the Research Club should be requested to consider the matter (all specimens, documents, &c., being placed before them), and that their decision should be unreservedly received. Unfortunately I have just (i.e., five days after my offer) learnt that Professor Sherrington declines to accept arbitration. Under these circumstances it is impossible for Professor Boyce and myself to take any further part in this correspondence.

I am, Sirs, yours faithfully,

Cavendish-square, W., Feb. 28th, 1894. VICTOR HORSLEY.

"HOSPITAL *v.* HOME MORTALITY IN INFECTIOUS DISEASE."

To the Editors of THE LANCET.

SIRS,—In Dr. Hope's pamphlet, to which reference was made in THE LANCET of Feb. 17th, there is a statement as to the large number of patients sent to fever hospitals whose complaints have been erroneously diagnosed before their admission. As this is a charge not infrequently brought against the general practitioner, an experience of my own, though not quite recent, may be of some interest. In June, 1892, I was called to see a boy and after attending him for about a week was satisfied that he suffered from typhoid fever, all the usual symptoms being present. I recommended his removal to hospital; this was done on June 17th and for a time I heard no more of the case. Four weeks afterwards the boy's mother came to me in much agitation, having received a letter from the hospital authorities to the effect that she must remove her son as he had not suffered from typhoid fever. Preferably he was to be taken to a general hospital. When she went to remove the boy she received an open letter, which I have before me, headed "An abstract from the notes of the case of F. B——." This document begins by stating that F. B—— was admitted to hospital on June 17th, "was sent in as typhoid fever, no symptoms of typhoid fever, was taken into hospital because he appeared very ill and we had plenty of room."

The letter goes on to describe the lad's symptoms during the next month, these being chiefly in the chest and abdomen. One day paracentesis was performed on the left side and the remarkable amount of five ounces of clear serum drawn off. The abdomen was distended and much care seems to have been exercised in measuring it. The end of the letter states, "diagnosis: tuberculosis with tuberculous pleurisy." The boy was brought home to die—as the parents were informed. Extract of malt, tonics and good food were given to him and within a month he was fully restored to health. Three thoughts suggest themselves: Why should a patient with "no symptoms of typhoid fever"—according to the hospital authorities—be taken into, and kept in, a fever hospital for four weeks? Why did a patient, diagnosed as suffering from tuberculosis, after a month's observation, recover—and that, too, so rapidly? Why, in such a case, is no private notice sent to the practitioner first in charge? If erroneous diagnosis on the general practitioner's part may create distrust of fever hospitals, the remarks of the lad's parents and friends in this case would tend to show that

greater distrust can be created by faulty diagnosis after admission to hospital.—I am, Sirs, yours truly,

JOHN MCGIBBON, M.B. Edin.

Durning-road, Liverpool, Feb. 24th, 1894.

"DEATH FROM HÆMORRHAGE INTO THE PERICARDIUM."

To the Editors of THE LANCET.

SIRS,—It has been with much interest that I have read a communication on this subject in THE LANCET by Dr. John Gordon of Aberdeen relating the death of a patient, after two hours' illness, from slow hæmorrhage into the pericardium. Abdominal pain was a leading, if not the most prominent, symptom in the case; and although Dr. Gordon remarks, in the light of the subsequent necropsy, that "the reference of nearly all the symptoms to the abdomen was distinctly misleading," yet, as he well relates of a certain stage of the man's illness prior to death, "he now began to complain of intense pain in the abdomen." I feel grateful to Dr. Gordon for placing on record another instance of this misleading, though, as far as the pericardium is concerned, to my mind characteristic symptom; and I feel sure that his interest in the matter will enable him, as well as other readers of THE LANCET who may have had their attention directed to it, to assoilzie me from the conclusion of egotism if I refer to an article which you published in THE LANCET of July 11th, 1885, entitled "On the Symptoms of Abdominal Pain in Slow Intra-pericardial Hæmorrhage" I have there recorded three cases of death from slow hæmorrhage into the pericardium, where abdominal pain was a most marked, if not the salient, symptom in each instance. 1. Rupture of aortic aneurysm; patient's age forty-eight years; death in six hours. 2. Rupture of right auricle; age forty-five years; death in eight hours. (Rusts' recorded case after right auricular rupture lived fourteen hours.) 3. Stab of left ventricle; age twenty-five years; death in six hours. In each of these cases the abdomen was found to be absolutely normal, nothing being apparent to account for the intense abdominal pain complained of, which was certainly misleading enough to justify, in one instance at least, a diagnosis of peritonitis. In Dr. Gordon's case it is true that "the upper part of the small intestine was distinctly congested"; but probably he will agree that this was hardly sufficient to account for what is described as "the agony which the patient suffered," as little perhaps as it had to do with a death in two hours and ten minutes.

I am, Sirs, yours faithfully,

WILLIAM J. NAISMITH, M.D., F.R.C.S. Edin. (Exam.).

Feb. 28th, 1894. Surgeon, Ayr County Hospital.

THE DISCUSSION ON ANÆSTHETICS.

To the Editors of THE LANCET.

SIRS,—After considerable experience of both anæsthetics I have come to the conclusion that ether is incomparably safer than chloroform. There are drawbacks, however, to its administration which were not alluded to in the recent discussion on anæsthetics; for instance, it is dangerous to use ether when employing the actual cautery to the eye or face. I have seen the patient vomiting flame, the inhaler a mass of fire, and the nurse's dress ignited owing to want of caution in this respect. Again, the irritation of the vapour of ether is apt in certain cases to provoke an attack of bronchitis, not by any means a frequent consequence of its administration, but it is singular that the only two deaths I have known as a result of anæsthesia induced for surgical operations have been occasioned in this way. It does not appear to be generally known, but it is possible with this anæsthetic, if it is pushed, to operate in such cases as strabismus, for instance, or extirpation of the eyeball at a very early stage—i.e., in one, two, or three minutes—if the patient is directed to hold up his hand at the commencement of the inhalation and the opportunity is seized the moment it drops; in these cases recovery is just as rapid, and there is no sickness. The danger from chloroform, and I have seen several most alarming cases, has in my experience always been (contrary to the teaching of the Hyderabad Commission) from cardiac syncope; lowering the head, pulling forward the tongue, stimulating the heart by pressure and occasionally artificial respiration have always in my hands sufficed for the restoration of the patient. A firmly contracted pupil has appeared to me a sufficient indication of the anæsthetic sleep, and I have had good cause to consider a widely dilated pupil as an indication of danger. One point not noticed is that the conjunctiva becomes insensitive in children much sooner than in persons advanced in years, in whom sensibility often persists after the reflex is abolished. I agree with Dr. Sansom that equal parts of alcohol and chloroform are preferable to the A.C.E. mixture; the strength of the vapour is in this way reduced by one-half and the danger is proportionally diminished. I find that children take this mixture more readily if it is scented and given on a handkerchief. I have also in very nervous cases administered chloroform during sleep, lifted the child out of bed, performed the operation, and returned it undisturbed. Nitrous oxide gas answers admirably in such operations as probing the lacrymal duct, removing tumours from the eyelid, strabismus, and other surgical procedures which admit of rapid execution. Its great advantage is that it does not cause vomiting; about six inhalations suffice to render a child insensible, and adults do not require, as a rule, more than a minute to render them incapable of feeling, a condition which may be maintained for four or five minutes—sufficient for many major operations. I have often used it in conjunction with ether, and if given with oxygen all cyanosis is avoided. Cocaine as a local anæsthetic is all that could be wished for in cataract extraction, and tropococaine, which does not dilate the pupil, is apparently equally useful. My experience of anæsthetics is perhaps not equal to that of Mr. White, but I have seen some thousands of cases.

I am, Sirs, yours truly,

CHAS. BELL TAYLOR, M.D., F.R.C.S. Edin.,

Surgeon, Nottingham and Midland Eye Infirmary.

Feb. 26th, 1894.

MEDICAL DEFENCE UNION.

To the Editors of THE LANCET.

SIRS,—We are instructed by the Council of the Medical Defence Union to point out that at the present time the actions in which the Union is involved, and which have recently been the subject of comment in the public and medical press, are *sub judice*, and that, pending the hearing and decision of these actions, it would be improper to discuss in the public press details regarding them. At the close of the pending litigation every facility will be afforded to the profession to obtain correct information and data on which to form a judgment.—We are, Sirs, yours truly,

HEMPSON AND ELGAR,

King-street, Cheapside. Solicitors to the Union.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Gas Management.

AN important discussion took place at the meeting of the council on Wednesday last as to the gas manufacture of Manchester, which is in the hands of the corporation. As to illuminating power, the gas compares well with that of many other places, though some people are sceptical as to its being always kept up to the standard. It seems, however, that the standard of so many candle power is a delusion, as there is no standard candle in existence. In the course of the discussion one speaker said that Manchester had one standard and Salford another, and that they differed from each other to the extent of two-candle power. The resolution was to the effect that the advice of a gas engineer of standing and authority should be sought as to the proper means in order to place the undertaking in a thoroughly satisfactory position; and the mover of it considered that the price might be reduced and the illuminating power and purity increased without any reduction of the profits, which go to the relief of the rates. The resolution was lost by three votes—equivalent, no doubt, to a "moral victory," and good will certainly result. Little or no mention seems to have been made of one impurity for which Manchester gas is alleged to have a bad name—i.e., the presence of sulphur in large amount. The discussion, however, has already done good in eliciting a letter on this subject from the secretary of the Manchester and Salford Sanitary Association. About

fifteen months ago the Noxious Vapours' Abatement Association stated that, on the average of twelve analyses, it contained 43½ grains of sulphur per 100 cubic feet of gas burned. In London the maximum allowed is 22 grains in winter and 17 in summer; but it is said that the actual amount in the metropolitan gas is only 12 grains. An excess of sulphur is not desirable as regards health, and in view of the part gas may play in the purification of the air from smoke, by use for gas engines, heating, and cooking, it is to be hoped that the impurity will be lessened, as it can and ought to be.

Provident Dispensaries.

A meeting of the Medico-Ethical Association was held on Feb. 23rd, at which an important and elaborate paper was read by Dr. Stewart. He has been one of the staff of the Pendleton branch for thirteen years and is therefore thoroughly acquainted with the working of the system, as illustrated by that institution. The general conclusion he arrived at was that, though there is good in the system, it is one, as at present carried out, that bears unjustly on the medical profession. In theory it is admirably fitted for dealing with the difficult problem of the medical relief of those of the humbler classes who, whilst above the rank of paupers, are yet unable to pay the ordinary fees of the general practitioner. One difficulty is that this class does not freely avail itself of the dispensary system, while those who are somewhat higher in the social scale—as measured by means—are too often not ashamed to obtain medical attendance which is virtually gratuitous, and thus much abuse from this cause has crept in. Another difficulty arises unhappily from the keen competition and struggle for existence in our overcrowded profession. A family refused by one of the staff, on account of the largeness of their means, may be added to the list of another not so punctilious; while yet another deplorable element is the rivalry of those practitioners "running" private dispensaries and going by the title of "sixpenny doctors." The large proportion of sick and ailing was shown to be one reason for the excessive amount of work in relation to the stipend, and it was generally agreed that a medical man could not make a living by the dispensary system as at present organised. The constitution of the committees of management and the relations of the honorary members to the medical staff were shown to be productive of much friction. In the discussion that followed there was a general agreement with Dr. Stewart's views; but the subject was deemed to be of such importance that it was decided to print the paper, or a summary of it, to be circulated among the profession in Manchester, and to resume the discussion at a special meeting. It will be well, therefore, to await the further expression of opinion, leaving untouched many points of importance and the remedies suggested for the defects of the system.

The Clinical Society.

THIS prosperous association had a pleasant dinner about a week ago at which about sixty members were present. The society has been in existence nine years and has served a useful purpose in supplementing the old-established Medical Society of Manchester, and also by a friendly rivalry in stimulating it to more vigorous activity. There can be no doubt about the benefit to the local profession derived from occasional friendly meetings of a social character. Many misunderstandings are removed and asperities smoothed away which would otherwise embitter the relations of those who should in their own interests and in the interests of the profession carry on their daily work with mutual goodwill.

Feb. 27th.

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

Newcastle Dispensary.

THE annual meeting of this old medical charity has been held, the mayor presiding. The report stated that the work done by the institution has been greater than in any previous year, nearly 28,000 patients being attended to in all. The house surgeon, Dr. Richardson, in a painstaking analysis of the cases, showed that during the year 887 cases of measles had been treated, and he believed that the mortality from the disease was increasing, and in a marked degree, strange to say, during alternate years. The financial report showed that there was an invested capital of over £40,000. Should not some of this be spent in some way for the benefit of the sick poor?

Newcastle Skin Hospital.

This hospital has held its annual meeting and shows a large record of work done, as 2521 cases had been attended. This institution should be better supported and so enabled to erect proper baths, a necessary for the treatment of these special cases not available at their homes.

Carlisle and the Lake District.

The annual meeting of the Carlisle Dispensary has been held, and from the report it appears that during the year 1893 3964 patients had sought medical relief from the institution, the home patients numbering 2181 and the out-patients 1783. These numbers were the highest on record, and, as compared with the previous year, showed an increase of 700 cases. The financia statement was, so far, satisfactory, the balance due to the treasurer being reduced. The mayor, in moving the adoption of the report, remarked that this was, perhaps, the oldest medical charity in Carlisle, and it was gratifying to see the immense amount of good done.—The water committee of the Carlisle corporation have agreed to recommend a gravitation water scheme for the city, which, if adopted, will be very extensive and cost the city about £110,000. The proposed source is the river Caldew, over twenty miles to the south-west of Carlisle. The Caldew rises at Skiddaw and the valley of Mosedale. The scheme would give about 2,500,000 gallons of water per diem.

A Surgeon Lost in the Snow.

The body of Mr. J. Inman, surgeon, of Garesdale, was found in the snow last week on Black Moss. Mr. Inman, in order to shorten the road, walked by the fells to see a patient, but as he did not return after two days, search parties scoured the fells, where at last the body was found deep in the snow. The snow had been very deep in the Ghylls, and it is supposed that the unfortunate gentleman, who was about sixty years of age, was driven out of his course by the storm, and being exhausted either fell or lay down, and so perished.

Strange Case of Supposed Poisoning at Keswick.

A strange case of supposed poisoning in a family of three children occurred at Keswick. They all partook of an apple, which had been divided in three parts. On the Saturday they were all taken ill, the youngest died on the Monday, and the other two, after much sickness, recovered. The medical witness, Dr. Crawford, deposed that the post-mortem examination showed the presence of acute gastro-enteritis, such as would be caused by arsenic. He had heard that arsenical solutions were used in America for syringing fruit trees, and that the New York Board of Health had seized and destroyed tons of fruit that had been treated in this way. After some discussion at the inquest the coroner directed the contents of the stomach to be analysed, and an adjournment was made for a fortnight.

Another Case of Suicidal Poisoning by Carbolic Acid.

In some of my late notes I stated that I feared carbolic acid poisoning was becoming common about Newcastle. I now have to record another case which took place at Ebchester last week. The victim, a girl aged seventeen, purchased sixpennyworth of carbolic acid, which she took, and died in a few hours. No cause could be assigned at the inquest for the rash act.

Newcastle-on-Tyne, Feb. 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

New Medical School for Women.

GLASGOW seems in a fair way to become as regards medical schools for both sexes the best provided of all cities in the kingdom: there are the University and the three extra-mural schools for men, and Queen Margaret College and—the most recent of all—the Muirhead College for women. When, about three years ago, Dr. Henry Muirhead of Cambuslang died, it was found that he had left about £34,000 "for the purpose of erecting and partially endowing an Institution or College, somewhat after the lines of the old Andersonian, for the instruction of women in physical and biological sciences (but not theological), to fit them to become medical practitioners, dentists, electricians, chemists, &c., to be placed in proximity

to the Victoria Infirmary." Dr. Muirhead's strong and rugged personality is seen in other provisions mentioned in his deed of settlement: the College is not to be called Victoria or Queen's, and he would have no medical men or clergymen as trustees. It was at one time hoped that by some equitable arrangement an amalgamation might have taken place with Queen Margaret College, which, however, has now been absorbed into Glasgow University, not affiliated, and has become, as stated in the local post-office directory, the women's department of the University. Negotiations had therefore to be carried on with the University Court, and here the proposals of the Muirhead trustees met with a simple and cool *non possumus*. The result is just what might have been expected. The trustees, after years of waiting and discussion, have determined to go on with their task, and to erect in Glasgow a rival to Queen Margaret College; and, further, as a university degree is now everywhere regarded as the proper end and crown of a college curriculum, the trustees are arranging to pass by Glasgow University and to seek affiliation with St. Andrews. It is a grave matter when an institution, which is supposed to exist in order to foster and encourage learning in the West of Scotland, assumes such a position as prevents it from discharging its obvious functions, and it is to be hoped that the University Court have sound reasons for their policy. It seems that the University, having absorbed and assumed entire control of Queen Margaret College, wishes to have the same entire management and sole control of the Muirhead College and its funds, conditions which the trustees rightly decline to entertain. Surely it is not impossible to hit upon some arrangement which would provide Glasgow with one strong medical school for women. If the University is alive to its own interest some such *modus vivendi* will speedily be found. The easiest and simplest solution (to the mere extra-mural mind) is one that has been more than once advocated in the columns of THE LANCET, and there seems to be no reason why the medical faculty of Queen Margaret College should not be detached from the other faculties and sent south to the new institution at the Victoria Infirmary, the school in the west end being reserved for the departments of science, literature, languages, art, &c. There has never been a single sound argument adduced against such a course, and there is everything to be said in its favour: in particular, it would enable the University, as a State-aiding and degree-granting institution, to discharge its bounden duty to this part of the country; it would give us one school for women, which, for equipment, endowment, and facilities for clinical instruction in a hospital reserved exclusively for the teaching of women would be absolutely without a rival in this country, and, above all, it would relieve the University of the task (found utterly unworkable in the case of the male students—hence the founding of the Western Infirmary after the University had moved westwards) of attempting to carry on in a satisfactory manner the systematic and theoretical instruction of students in the extreme west end of the city, while their clinical teaching is to be obtained only in the extreme east, at a distance of about three miles from their college, and in an infirmary which has more than once shown itself to be anxious to be rid of female students.

Feb. 28th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

National Eye and Ear Infirmary, Dublin.

THE committee of management in their annual report refer to the proposed amalgamation with St. Mark's Ophthalmic Hospital. They state that this generally-wished-for scheme would have been on the way to accomplishment ere this but for the fact that a difficulty had arisen as to the name which the amalgamated institution should bear. The board of St. Mark's Hospital desired that it should be called "St. Mark's and National Eye and Ear Infirmary," but the committee of the latter institution would not consent to this. They proposed that the matter should be left to arbitration, and to this the board of St. Mark's has given a qualified assent. A draft Bill will be introduced in Parliament to effect this amalgamation. During last year 365 cases were admitted to the wards, and 2918 were attended to in the out-patient department.

Health of Dublin in 1893.

The births registered in the Dublin Registration District during 1893 amounted to 10,009, a number equal to 29 per 1000, which was also the average rate for the preceding ten years. The deaths were 9409, or 26·9 per 1000; the average death-rate for the ten years 1883–92 was 27·9. The total number of deaths from zymotic diseases was 1533, being 280, or 22·3 per cent., over the average for the previous ten years. The increase as compared with the average was chiefly due to the heavy mortality from diarrhœa among children, the prevalence of enteric fever for the greater portion of the year, and the comparatively high number of deaths from influenza and its complications. There were but few deaths from either scarlet fever (25), or typhus fevey (16), and the mortality from measles was much below the average. There was not a single case of small-pox under treatment in the various hospitals during the year. Typhoid fever caused 276 deaths, or 0·8 per 1000, being 119, or 76 per cent., in excess of the average number for the previous ten years, and 48, or 21 per cent., over the highest number for any of those years, which was 228 in 1889. Of the 980 cases of typhoid fever treated in hospitals 82, or 8·4 per cent., proved fatal. Influenza and its complications caused 102 deaths (in the preceding year the mortality amounted to 224). Diarrhœa and dysentery caused 447 deaths, being 182, or 69 per cent., in excess of the average for the preceding ten years. Diseases of the respiratory system caused 1642 deaths, a number considerably below the average. These deaths include 957 from bronchitis and 471 from pneumonia. Phthisis caused 1298 deaths, or 41 above the average. The deaths of infants under one year old were equal to 180 for every 1000 births registered, against 180 in the year preceding.

Belfast Royal Hospital.

A report has just been made public by the committee appointed to consider certain charges made by the superintendent of the Belfast Fire Brigade (whose men take charge of the public ambulance) against the Royal Hospital. The following points were investigated by the committee: 1. An alleged delay in the treatment of patients. 2. A consequent detention of the ambulance at the hospital. 3. A difficulty in obtaining stores from the hospital for the ambulance. The first charge the committee regarded as a very serious one, as it was stated that three accident cases were brought to the hospital on Feb. 13th at 10.25 A.M., and were not seen by any medical man until 11.14 A.M.—that is, for a period of forty-nine minutes. The committee state that the following are the facts of the case: (*a*) Two of the three men were seen by Professor Sinclair within ten minutes of their admission to the hospital; (*b*) in about ten minutes the house surgeon and house physician attended to the men (they had been with other patients, one administering chloroform at the time of the arrival of the patients): owing to the overcrowded state of the hospital wards other patients had to be removed from beds to beds elsewhere in the hospital, and the beds re-made before receiving the new patients: (*c*) two of the patients were able to appear before the committee and corroborated the above statements, and said that in about twenty minutes after admission to hospital they were in their beds, which had been vacated for them. They also said they were perfectly satisfied with their treatment in the hospital. In the face of such facts the committee regret that such a false charge should be so lightly made against the staff of the hospital, and are persuaded that all friends of the hospital will resent the spread of a report so calculated to damage the institution. The superintendent of the fire brigade, who was present, admitted he was satisfied, from the evidence produced, that his engineer had made an incorrect report. 2. As to the detention of the ambulance at the hospital, it appears that it has been the habit of the ambulance men to remain at the hospital and render assistance in carrying patients to the wards, and before leaving to get the names, addresses, and particulars of the injuries of those admitted. This takes time, and the committee are of opinion that the ambulance corps men have done their duty when they have delivered patients at the hospital, and that there is no necessity for their remaining longer. 3. As regards the issue of stores to the ambulance, this is the first time the committee have heard that the existing arrangements are not satisfactory. The matter, they think, can be readily rearranged so as to meet all the requirements of the ambulance service. The committee beg to report that of the above three charges No. 1 is the only one of any public interest, involving, as it does, a grave charge of neglect on the part of the hospital authorities. The other two matters are questions simply of routine and arrangement. It is a pity, they think, that such unfounded charges should ever

have made their way into the public papers without previous communication with the board of management, who have unanimously adopted this report of their subcommittee. At the quarterly meeting of the hospital, held on Feb. 26th, great satisfaction was expressed at the publication of the above report.

Dr. Parsons has been appointed physician to the City of Dublin Hospital, in the room of Dr. J. H. Benson, resigned.

Mr. William John Russell of New South Wales has been admitted a Fellow of the Royal College of Surgeons in Ireland.

Feb. 27th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Pistol Shots in the Ear.

M. LADREIT DE LA CHARRIÈRE called the attention of the Société de Médecine Légale to the lucky escapes after bullet wounds in the neighbourhood of the ear that sometimes occur. He has recently had to treat for some ear trouble a young woman who had lately been discharged from the wards of M. Polaillon after recovery from a self-inflicted bullet wound in the ear. The bullet, penetrating somewhat above the external meatus, had found its way into the temporal fossa and then ricochéd again into the external meatus, all the injury effected having been a perforation of the membrana tympani. M. Polaillon had a case where a revolver bullet penetrated through the ear into the brain, finally lodging in the pons on the opposite side. There it remained for five days without provoking any further symptom than headache. Then encephalitis set in, and death occurred in spite of trepanning. M. Brouardel once performed a necropsy on the body of a maniac in whose cranium and brain there were discovered, in addition to the projectile that had occasioned death, three others, the results of previous attempts to commit suicide. Two had lodged in the temporal bone and the third was encysted in the brain substance. On another occasion he made a post-mortem examination of a man who was seen by a crowd to fire into his forehead a ball of eleven millimetres calibre. He remained standing, and then fired a second ball into the ear. Again he did not fall, and only a third shot fired from below upwards into the mouth brought him to the ground. M. Brouardel remarked that had the tragedy not been witnessed by so numerous an assembly the theory of suicide would hardly have been entertained. It follows that in such cases which terminate fatally it must not hastily be assumed that the penetration of a bullet into the ear is the real or the only cause of death.

A Medico-legal Mistake.

The need of technical experience in medico-legal inquiries was but too amply proved in a paper by MM. Brouardel, Descoust, and Ogier read at the same meeting of the Société de Médecine Légale. On April 10th, 1887, a woman who kept an inn called in two passers-by, saying that her husband had just died. The woman appeared to be intoxicated. Instead of one body there were discovered two—that of the husband and that of his brother. One was found on the threshold of a door leading to the cellar and the other upstairs on a bed, the latter being already in a state of rigor mortis. The woman was immediately arrested, and appeared, when examined twenty-three hours later by the Procureur de la République, to be still under the influence of drink. The Procureur noted that she was in a real or feigned state of stupidity. At the necropsy, performed by three distinguished men—a physician and two analytical chemists—there were found the characteristic colour (cherry-red) signs of carbonic oxide poisoning; but the witnesses never thought of such a solution of the problem, which a spectroscopic examination or an analysis of the gases of the blood would have instantly confirmed. Struck especially by the congestion of the stomach and small intestines, the experts came to the conclusion that death was due to poisoning, the poison being non-caustic, but irritating to the alimentary canal, and that it had acted after absorption, probably on the nervous system, and so caused death. Although the exact nature of the poison could not be determined, the woman was condemned to penal servitude for life. The fact that she was an habitual drunkard and that her husband had only a few days before the catastrophe had visual proof of her infidelity weighed strongly with the jury in their verdict. The supposed murder was thought to have been an act of vengeance. Now, three days before his death the condemned woman's husband had been suddenly seized with tremblings and loss of consciousness. Summoned by a customer from upstairs the wife descended, but sat down immediately with her head on a table, but did not lose consciousness. Both husband and wife vomited. The wife's brother, who lived in the house, was seized the same evening with repeated vomitings. On the evening preceding the fatal *dénouement* the husband and wife had had a repetition of the same curious symptoms. After the departure of the woman a man and his wife took the inn. The man was constantly out of doors and remained well; but the woman was often unwell, and one day was found dead. A medical man certified that death had been caused "probably by the rupture of an aneurysm." In 1889 another couple took the house. One day the wife rushed out of the house, looking scared. She fell, speechless, and in the house her husband was found, unconscious, having vomited. Recovery ensued. In the cellar the cat was found dead. Now, the explanation of this series of accidents was not far to seek. On the slope of the hill against which the inn was built there was a limekiln, the lower opening of which was in the courtyard, close to the cellar door, the mouth being on a level with the roof. The occurrence of these illnesses drew attention to this dangerous proximity, and the kiln was no longer used. The inhabitants have since remained perfectly well in health. The report of MM. Brouardel, Descoust, and Ogier, who were deputed to examine the premises, established the innocence of the condemned woman, who has now, after six years' hard labour, been released. The paper terminated by calling special attention to the state of stupidity, resembling drunkenness, of persons under the influence of carbonic oxide gas. This was very marked in the case of the unjustly condemned woman, and the evident contradictions in her evidence were undoubtedly due to poisoning by this gas. It is of common occurrence to remark in persons who have been subjected to the (non-fatal) influence of carbonic oxide gas either more or less complete amnesia and defects in the memory, which persist for some considerable time.

The Nature of Exophthalmic Goitre.

The toxic symptoms observed in some cases of myxœdema treated by the ingestion of thyroid gland tissue recall so forcibly certain troubles present in exophthalmic goitre, that one is led to ask if hyperthyroidisation is not the true cause of Basedow's disease. Tachycardia, rise of temperature, insomnia, agitation, polyuria, albuminuria, incomplete paraplegia, heat sensations, diaphoresis, and diarrhœa—these complications of the thyroid treatment are very suggestive of symptoms complained of by subjects of exophthalmic goitre. While accepting the validity of this theory (therein agreeing with Professor Greenfield, whose recent Bradshaw lecture must be fresh in the minds of your readers) of excess of function of the thyroid body as explaining these phenomena in the latter disease, M. Marie[1] throws the onus of their production on derangement of the nervous system (? the sympathetic). This nervous perturbation occasions an exaggerated secretion of thyroid juice and the clinical phenomena above mentioned declare themselves. For be it noted that an overdose of thyroid gland has never yet provoked the appearance of exophthalmos or of von Graefe's symptom. Moreover, in several cases of Basedow's disease treated by the removal of the thyroid body or by the ligature of the carotid arteries, the exophthalmos has persisted (three cases recorded by Dreesman, one case by Sprengel). On the other hand, thyroidectomy has brought about in other instances a disappearance of the protuberance of the globes of the eye. The nervous origin of exophthalmic goitre is further proved by its sudden onset after a strong moral shock. Barié and Joffroy have furthermore called attention to the remarkable frequency of Graves' disease in individuals suffering from locomotor ataxia. What seems certain is that some of the symptoms of Graves' disease are due to hypersecretion of thyroid juice, and that consequently the administration of thyroid extract, as recommended by some physicians in that disease, is contraindicated. Horsley has already established the inutility of such treatment, and quite recently Canter of Liège, in relating a case of myxœdema cured by thyroid tissue, states that he has observed an aggravation of several symptoms when the same method was applied in

[1] Société Médicale des Hôpitaux, Feb. 23rd.

Basedow's disease. On the other hand, M. Marie pronounces strongly in favour of thyroidectomy. Professor Tillaux was the first to cure two exophthalmic cases by this means. Putnam has recently published statistics of forty-one cases treated by thyroidectomy; in thirty-four of these recovery or considerable improvement ensued, four ended fatally, one remained *in statu quo*, and two patients had tetany. Such figures encourage the belief that the treatment of exophthalmic goitre should henceforth be conducted, not by the physician, but by the surgeon. I may mention, in conclusion, that in the *Médecine Moderne* of Feb. 24th, Dr. Brissaud publishes the details of a case treated by "exothyropexia" which ended fatally, the girl (aged twenty years) sinking rapidly in a state of coma. Professor Poncet of Lyons is the author of this new operation. In it the thyroid gland is exposed by a longitudinal (or crucial, if the volume be very large) incision. The extruded gland is fixed between the lips of the wound and allowed to mummify. MM. Poncet and Jaboulay have successfully performed the operation in fourteen cases of goitre, four of which presented the *tableau clinique* of Graves' disease.

Feb. 20th.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—The following candidates passed in the undermentioned subjects in February:—

Surgery.—T. W. W. Burgess, St. Bartholomew's Hospital; J. C. Cook, Middlesex Hospital; R. Evans, University College; R. S. Fairbank, King's College; J. Friend, Leeds; H. E. E. Greene, M.A., Royal Free Hospital; W. G. R. Macaulay, St. Thomas's Hospital; W. Mettam, Sheffield; D. S. Owen, London Hospital; G. H. Pearce, St. Thomas's Hospital; P. L. G. Skipworth, St. Bartholomew's Hospital; F. E. A. Webb, St. Bartholomew's Hospital; and C. J. Wills, Liverpool.

Medicine, Forensic Medicine, and Midwifery.—C. P. Allen, Middlesex Hospital; F. R. S. Cosens, London Hospital; A. Douglas, Birmingham; H. A. Julius, St. Thomas's Hospital; F. W. Rock, St. Bartholomew's Hospital; and J. A. Stainsby, London Hospital.

Medicine and Forensic Medicine.—D. W. Jones, Charing-cross Hospital.

Medicine and Midwifery.—F. E. A. Webb, St. Bartholomew's Hospital.

Medicine.—E. S. Chilcott, St. Mary's Hospital.

Forensic Medicine and Midwifery.—F. E. H. Keogh, St. Mary's Hospital; E. Smallwood, Liverpool; and W. S. Webb, London Hospital.

Forensic Medicine.—E. S. L. Lovell, Charing-cross Hospital, and F. L. Taylor, Aberdeen.

Midwifery.—H. Andreae, University College; H. E. E. Greene, M.A., Royal Free Hospital; and H. R. Walker, King's College.

To Messrs. Allen, Andreae, Evans, Fairbank, Pearce, Smallwood, Stainsby, Walker, Wills, and Miss Greene was granted the diploma of the society entitling them to practise Medicine, Surgery, and Midwifery, and enabling the holder to compete for medical appointments in the Army, Navy, and India Service; also for Poor-law appointments.

PRESENTATION.—The friends of Dr. James Martin Kennedy, who has recently left Peterborough on the occasion of his approaching marriage, are about to present him with a handsome silver salver, accompanied by an artistically illuminated address, which, with other decorations, is bordered with foliage and flowers of the shamrock and thistle, as emblems of the nationality of himself and his affianced. The salver bears the following inscription: "Presented to James Martin Kennedy, M.D., by a few friends and patients as a token of sincere regard and esteem."

MEDICAL SOCIETY OF LONDON.—The following are the names of Fellows nominated for office by the Council of the Medical Society of London for the session 1894-95 (the names on this list will be balloted for at the general meeting to be held on Monday next, at 8 P.M.):—President: Sir William Bartlett Dalby. Vice-presidents: Dr. Frederick T. Roberts, Mr. Frederick Treves, Dr. Sidney Coupland, and Mr. Henry Hugh Clutton. Treasurer: Mr. Arthur Edward Durham. Librarian: Dr. William Henry Allchin. Honorary Secretaries: Mr. Charles B. Lockwood and Dr. Amand Routh. Honorary Secretary for Foreign Correspondence: Dr. Heinrich Port. Council: Mr. William Anderson, Mr. Henry Frederick Bailey, Mr. W. Mitchell Banks (Liverpool), Mr. Howard Barrett, Mr. William Henry Bennett, Dr. John Syer Bristowe, F.R.S., Mr. G. Buckston Browne, Mr. John Cahill, Mr. F. Swinford Edwards, Mr. E. Hurry Fenwick, Dr. Archibald E. Garrod, Dr. F. de Havilland Hall, Dr. Frederick W. Hewitt, Dr. Edward D. Mapother, Dr. William Marshall, Mr. William A. Meredith, Dr. H. Montague Murray, Dr. Edward J. Nix, Dr. William Pasteur, and Dr. Charles H. Ralfe.

BRITISH INSTITUTE OF PUBLIC HEALTH.—The annual Congress will be held in London from July 26th to 31st, 1894, under the presidency Dr. W. R. Smith.

NORWICH DISPENSARY.—The annual meeting of the subscribers to this charity was held on the 23rd ult., when the Mayor of Norwich, Sir Peter Eade, M.D., took the chair. The report and balance-sheet were read by the secretary. The sum of £317 had been collected in the provident department, and though there was room for regret that the benefits of the institution were not more fully appreciated by the industrial classes, yet the value of its efforts to meet the wants of the sick poor was acknowledged by all the citizens of Norwich. The honorary fund account showed receipts to the amount of £557, leaving a respectable balance. In responding to the vote of thanks for presiding on the occasion Sir Peter Eade remarked that the dispensary had the great advantage to those for whom it was intended that the medical officers undertook to visit sick people at their own homes when necessary.

EAST LONDON NURSING SOCIETY.—The friends and supporters of this society held their annual meeting at the Mansion House on the 27th ult., the chair being occupied by the Lord Mayor. The report, read by the secretary, stated that the sickness relieved by means of the agents of the institution had been more than 5 per cent. greater than had been the case in 1892. No fewer than 4259 persons had benefited by its aid, and 87,382 visits had been paid. A new district had been opened in Hackney Wick, thanks to the Eton mission; and by the liberality of a friend the committee had been enabled to engage two more nurses for the districts of Bow and Bromley. The Lord Mayor spoke highly of the beneficence of the work of the society, a testimony which was corroborated by Alderman Sir David Evans, who moved the adoption of the report, and remarked that since there were not more than 7000 beds in the whole of the London hospitals, the need of providing nursing assistance for the poor was very apparent.

ROYAL FREE HOSPITAL.—On the 22nd ult. the governors of this hospital assembled to receive the annual report of the work effected by its means during the past twelvemonth. Mr. W. T. Pritchard, the chairman of the committee, presided, and after a few introductory remarks called upon the secretary to read the report. From this it appeared that 28,209 persons had participated in the benefits of free medical treatment during the past year, either as in- or out-patients of the hospital. The financial statement was regarded as, on the whole, satisfactory, the receipts being represented by the sum of £4264, exclusive of legacies, whilst the expenditure amounted to £10,102, the balance being met by utilising various legacies received during the same period. The chairman announced that the rebuilding of the front of the edifice and the construction of the new laundry were progressing rapidly, so that the committee hoped to be able to arrange for the opening ceremony to take place in the ensuing autumn. Meantime he would urge all interested in the beneficent labours of the charity to assist in raising the £7000 still needed to complete the work at present in hand.

GREAT NORTHERN CENTRAL HOSPITAL, HOLLOWAY-ROAD.—The annual meeting of the general council of this charity was held on the 23rd ult., when Mr. C. T. Murdoch, chairman of the committee, presided. By the annual report it appeared that the number of applicants for medical relief during the year showed an increase on that of the previous twelvemonth, notwithstanding that every effort had been made to exclude persons who were found to be in a position to pay private medical practitioners. During the year 27,481 new cases came under treatment, 1091 as in-patients and 26,390 as out-patients. Whilst the relief dispensed had, however, augmented, the means placed at the disposal of the officers of the charity showed a serious falling-off, a fact to which the chairman, in proposing the adoption of the report, referred with great regret, since the committee were unable on that account to bring into full use the buildings which had been completed since the last meeting. The speaker mentioned with satisfaction that the Duke of York had consented to occupy the position of president of the institution, in succession to the late Duke of Clarence. After reference had been made to the lamented death of Sir Andrew Clark, their late consulting physician—a post which Dr. Cholmeley was at the same meeting chosen to fill—the usual vote of thanks to the chairman was carried before dispersal.

LITERARY INTELLIGENCE.—We understand that Sir William Dalby's papers on "Dr. Chesterfield's Letters to his Son on Medicine as a Career" will be reissued in book form on Wednesday next by Messrs. Longmans, Green and Co.

CHARITABLE BEQUESTS.—The late Mr. Thomas Avery, formerly an alderman of Birmingham, has bequeathed £1000 each to the General Hospital, the Queen's Hospital, the Birmingham Dispensary, the Deaf and Dumb Institution, and the Blind Asylum.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—Dr. Don Vincent A. Garcia, President of the Medical and Natural Science Society of Bolivar, Colombia.—Dr. Alonso Rubio, President of the Academy of Medicine, Madrid.—Dr. Albert Lücke, Professor of Surgery in the University of Strasburg.

FOOTBALL CASUALTIES.—A young man, aged thirty, while playing a game at Willesden on Saturday last fractured one of his legs and was removed to St. Mary's Hospital Paddington, and detained as an in-patient. On the same day, in a match between the Ravenhead Amateurs and the London and North-Western Reserve Clubs, at St. Helens, Liverpool, a youth, aged nineteen years, dislocated his knee.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—Fellowship Examination:—Mr. William John Russell, West Maitland (N.S.W.), L.R.C.P. and L.R.C.S. Irel., has been admitted a Fellow of the College. Mr. Patrick Thomas Bolger, Christ Church, New Zealand, L.R.C.P. and L.R.C.S. Irel., and Mr. Jeremiah Dowling, Tipperary, L.R.C.P. and L.R.C.S. Irel., have passed the preliminary part of the examination for the Fellowship of the same College.

THE INTERNATIONAL MEDICAL CONGRESS.—An official *communiqué* appears in the Roman journals touching the accommodation of members of the Congress. "All those," such is its tenour, "who have furnished rooms or apartments to let on the occasion of the next International Medical Congress, which begins on the 29th inst., may announce the fact to the respective agency offices of each district (*regione*), in order that the town council may be in a position to form a convenient list to place at the disposal of the Commission instituted *ad hoc* by the Organising Committee."

THE HEALTH OFFICERSHIP OF OLDHAM.—Dr. James Niven, whose election to the post of medical officer of health for Manchester we took occasion to notice at some length in our columns on the 10th ult., was a few days ago entertained at dinner at the Albion Club by the members of the Oldham Medical Society. The festivity was planned and carried out partly to congratulate Dr. Niven on his appointment to the above-mentioned important office and partly to afford opportunity for the members of the society to express their sense of the value of his services to the townspeople of Oldham during his seven years' official connexion with the borough in the cause of public health.

A GOLDEN WEDDING CELEBRATION.—The town of Sandbach, Cheshire, was lately *en fête* to celebrate the anniversary of the fiftieth wedding day of Mr. Charles Latham, M.R.C.S. The event was made the occasion on which to present their townsman with a substantial proof of the esteem in which he and his spouse are held by the residents of the neighbourhood. A goodly assembly came together—something like twelve hundred—to witness the presentation to Mr. Latham of an illuminated address and a purse of gold and a handsome watch to Mrs Latham. The proceedings throughout were of a most gratifying kind, not only to the recipients of the gifts, but to all who participated in the bestowal of the mark of neighbourly regard.

Parliamentary Intelligence.

The Work of the Session.

WHEN the two Houses of Parliament met on Thursday, March 1st, they had passed into law during the course of their session seventy-four public Bills. In addition they had passed a large number of private Bills and provisional orders promoted in the interests of particular neighbourhoods. Of the seventy-four public Bills the following may be mentioned as having a special interest for readers of THE LANCET, viz.:—Cholera Hospitals, Ireland, a measure promoted by the Irish Office; Barbed Wire Fences; Contagious Diseases; Animals (Swine Fever); Elementary Education (Blind and Deaf Children); Fertilisers and Feeding Stuffs; Isolation Hospitals, a measure promoted by Lord Thring in the House of Lords and Sir Henry Roscoe in the House of Commons; Railway Servants (Hours of Labour); Public Health (London) Act, 1891, Amendment; and Rivers Pollution Prevention—a Bill for which Sir Walter Foster was responsible in the House of Commons.

Compulsory Vaccination.

A petition for the repeal of the Vaccination Acts was presented to the House of Commons on Monday. It came from Weston-super-Mare.

HOUSE OF COMMONS.

THURSDAY MARCH 1ST.

The Proposed Fever Hospital at Chingford.

Colonel Lockwood asked the President of the Local Government Board whether it was true that the Walthamstow Local Government Board had acquired a site for a fever hospital in the adjoining parish of Chingford, and that the purchase had been sanctioned by the Local Government Board, although there were available sites within the Walthamstow area; and whether he was aware that the inhabitants of Chingford were never consulted as to the purchase of this site and that no opportunity had been afforded them of lodging an objection, the Local Government Board having refused to receive a deputation from Chingford on the matter.—Mr Henry Fowler said it was the case that the Local Government Board had sanctioned a loan to enable the Walthamstow Board to purchase a site in the parish of Chingford for a fever hospital. He had no information to show that the inhabitants of Chingford were never consulted. A local inquiry was held by one of the inspectors of the Local Government Board, and all persons interested were at liberty to attend and be heard at the inquiry, and, so far as the Local Government Board was concerned, the matter was at an end.—Colonel Lockwood assured the right hon. gentleman that his constituents had had no opportunity of laying their views before the Local Government Board and had no knowledge of the inquiry.—Mr. Henry Fowler said he could not understand that, for these inquiries were always notified.—Colonel Lockwood said he was prepared to make good his assertion that the inhabitants had never heard of the inquiry.—Mr. Henry Fowler undertook to inquire into the matter.

Factory Labour in London.

Mr. Alpheus Morton asked the Secretary of State for the Home Department whether he was aware that the Workshops and Factory Acts sanctioned the employment of young girls sixteen years of age and upwards in envelope manufactories for twelve hours every day of the week (excepting Saturday) and for two hours additional as overtime (making fourteen hours a day) on forty-eight days in every twelve months; and whether he would be prepared to favourably consider any proposal for modifying the code regulating the hours of labour in such manufactories that might be brought forward, especially as to abolishing overtime where long hours were already worked.—Mr. Asquith replied that overtime was permitted by the Factory Act of 1878 in this and other trades, but he hoped in an amending Bill to be able to reduce the number of hours permitted.

BOOKS ETC. RECEIVED.

ALCAN, FELIX, Paris.

Petit Manuel d'Anesthésie Chirurgicale. Par F. Terrier et M. Péraire. 1894. pp. 220.

La Médication par l'Exercice. Par Dr. F. Lagrange. 1894. pp. 580.

La Famille Névropathique. Par Ch. Féré. 1894. pp. 334.

BAILLIÈRE, TINDALL, & COX, King William-street, Strand, London.

A Handbook of Medical Pathology for the Use of Students in the Museum of St. Bartholomew's Hospital. By W. P. Herringham, M.D., F.R.C.P.; A. E. Garrod, M.D., F.R.C.P.; and W. J. Gow, M.D., M.R.C.P. 1894. pp. 313. Price 7s. 6d.

Clinical Lectures on Recent Surgery. By A. T. Norton, F.R.C.S. 1894. pp. 70. Price 2s. 6d.

Illustrations of Pathological Anatomy. Being a Series of Chromographed Plates painted from Nature immediately after Death. By Professor Dr. A. Kast and Dr. T. Rumpel. English edition. Edited by M. Armand Ruffer, M.D. Oxon. Part VI.

BALE & SONS, Great Titchfield-street, London, W.

Congenital Affections of the Heart. By George Carpenter, M.D. Lond. 1894. pp. 103. Price 3s. 6d.

CHAPMAN & HALL, Henrietta-street, Covent-garden, London.

Manual Instruction Series: Wood-working Positions. By W. Nelson. 1893. Price, small size, 2s. 6d.; large, 6s.

CHURCHILL, J. & A., New Burlington-street, London.

The Principles and Practice of Medical Jurisprudence. By the late A. S. Taylor, M.D., F.R.S. Fourth Edition. Edited by T. Stevenson, M.D. Lond. Vols. I. and II. 1894. Price 31s. 6d.

Injuries and Diseases of the Jaws. By Christopher Heath, F.R.C.S. Fourth Edition. Illustrated. Edited by H. P. Dean, M.S., F.R.C.S. 1894. pp. 428. Price 14s.

ELLIOTT & CO., Fleet-street, London, E.C.

Theosophy, or Spiritual Dynamics and the Divine and Miraculous Man. By George Wyld, M.D. Edin. Second Edition. 1894. pp. 264.

HIGGINBOTHAM & CO., Madras.

The Indian Manual of Hygiene. Being King's Madras Manual of Hygiene. By Surgeon-Captain A. E. Grant, M.B. Vol. I. 1894. pp. 442.

HIRSCHWALD, AUGUST, Berlin.

Atlas der Pathologischen Histologie des Nervensystems. II. Lieferung. Dégénération des Nerfs. Degeneration und Entzündung der Nerven. 1894. pp. 52.

Die Pathologie und Therapie der Nierenkrankheiten. Von Dr. Siegmund Rosenstein. Vierte Auflage. 1894. pp. 711.

LEWIS, H. K., Gower-street, London, W.C.

Sprains: their Consequences and Treatment. By C. W. M. Moullin, M.D. Oxon., F.R.C.S. Second Edition. 1894. pp. 153. Price 4s. 6d.

Dwelling-houses, their Sanitary Construction and Arrangements. By W. H. Corfield, M.A., M.D. Oxon., F.R.C.P. Lond. Third Edition. Illustrated. 1894. pp. 125. Price 3s. 6d.

LEHMANN, J. F., München.

Lehmann's Medicinische. Hand-Atlanten. Band II. Geburtshilfe II. Theil. Anatomischer Atlas der Geburtshilflichen Diagnostik und Therapie. Von Dr. O. Schaefer. 1894. pp. 220.

LIPPINCOTT, J. B., COMPANY, Philadelphia.

Philadelphia Hospital Reports. Vol. II. 1893. Edited by C. K. Mills, M.D., and Jas. W. Walk, M.D. 1895. pp. 292.

PENTLAND, YOUNG J., Edinburgh and London.

Manual of Practical Anatomy. By D. J. Cunningham, M.D. Edin. Vol. II. Thorax, Head, and Neck. Illustrated. 1894. pp. 647.

SPRINGER, JULIUS, Berlin.

Lehrbuch der Geburtshilfe. Von Dr. Max Runge. Zweite Auflage. 1894. pp. 543.

Die Krankheiten der oberen Luftwege. Von Prof. Dr. M. Schmidt. 1894. pp. 727.

THE SOUTHERN PUBLISHING COMPANY, Fleet-street, London, E.C.

St. Vesta, or New Worthing. By F.R.C.S. 1894. pp. 46.

WHITTAKER & Co., White Hart-street, London, E.C.

Dod's Parliamentary Companion. 1894. Sixty-second year. pp. 388. Price 4s. 6d.

WILLIAMS & NORGATE, Henrietta-street, Covent-garden, London.

Die Krankheiten der Nase, ihrer Nebenhöhlen und des Nasenrachenraumes. Von Dr. Carl Zarniko. 1894. Price 6s.

Grundriss der Kinderheilkunde. Von Dr. Carl Seitz. 1894. Price 9s.

The Johns Hopkins Hospital Reports: Report in Gynæcology, II.; Vol. III., Nos. 7, 8, 9 (The Johns Hopkins Press, Baltimore, 1894).—Archives of Surgery; January, 1894 (J. & A. Churchill, London); price 2s. 6d.—Physicians' Appointment Calendar: 1894 (Burroughs' Wellcome & Co., Snow Hill-buildings, London, E.C.).—The Medico-Legal Journal; September, 1893 (C. Bell, Esq., Broadway, New York).—The Northumberland and Durham Medical Journal; January, 1894 (printed at the "Daily Journal" Office, Newcastle-upon-Tyne).—Some Observations on the Pathology, Etiology, and Treatment of Gall Stones; by E. M. Brockbank, M.D.; reprint (J. Heywood, Manchester).—Brain: A Journal of Neurology; edited for the Neurological Society of London; by A. de Watteville; Part LXIV. (Macmillan & Co., London); price 3s. 6d.—Grant College Medical Society: Retrospective Address for the year 1893; by Rustomjee Naservanjee Khory, M.D., M.R.C.P. Lond., L.M., Bombay (J. B. Karani & Co., Bombay, 1894).—A Paper on our Imperial "British Pharmacopœia"; by Professor Attfield, F.R.S.; reprint (McCorquodale & Co., London, N.W., 1894).—A Short Guide to the Examination of Lying-in Women, with Woodcuts; by Professor Credé and Professor Leopold; translated by W. H. Wilson, M.B. Oxon (H. Kimpton, High Holborn, London, W.C., 1894)—The First Principles of Voice Production in Song and Speech; by Thomas Kelly, S.J.; reprint; second edition (Burns & Oates, London); price 6d.—Le Laboratoire de Physiologie de l'Université Impériale de Moscou; par le Dr. B. N. Popov (J. N. Kouchnerev et Co., Moscou, 1893)—Appareils et Instruments à l'usage des Physiologistes, construits d'après les Dessins de Professeur Léon Morokhovetz; Première partie (J. N. Kouchnerev et Co., Moscou, 1893)—The Royal Natural History; Vol. I., Part 4; edited by R. Lydekker, F.G.S., F.Z.S. (F. Warne & Co., Bedford-street, Strand, London); price 1s. net.—Rabies Canina (erroneously termed Hydrophobia): to the Manly, Intelligent, and Humane Man, and the "Friend of Man"; fourth edition; February, 1894 (Spottiswoode & Co., New-street-square, London).—Bifocal Lenses and Anisometropia: by W. A. Dixey (J. Hale & Sons, Great Titchfield-street, London, W., 1894).—Reduction of Cervical Dislocation; a Successful Case; by G. L. Walton, M.D.; reprint (Damrell & Upham, Boston, U.S.A., 1893).—Transactions of the Cremation Society of England; No. VII. (published at 8, New Cavendish-street, Portland-place, London, 1894); price to non-subscribers, 6d.—Archiv für Experimentelle Pathologie und Pharmakologie; von Dr. B. Naunyn und Dr. O. Schmiedeberg; 16. Februar, 1894 (F. C. W. Vogel, Leipzig, 1894).—Sonderabdruck aus den Therapeutischen Monatshetten; Januar, 1894 (J. Springer, Berlin, N.).—The Journal of Pathology and Bacteriology; February, 1894 (Y. J. Pentland, London and Edinburgh).—Royal United Service Institution: the Effect of the Lee-Metford Bullet on the Bones of Horses; by Veterinary-Captain F. Smith, Army Veterinary Department (Harrison & Sons, St. Martin's-lane, London).—Bradshaw Lecture for 1893: Sir Astley Cooper and his Surgical Work; by Sir William MacCormac (Ballantyne, Hanson & Co., Tavistock-street, London).—Przeglad Chirurgiczny; by Dr. W. H. Krajewski; tome 1, zeszyt 3 (K. Kowalewkiego, Warszawa, 1894).—Normal Labour as conducted in the Frauen-Universitäts-Klinik, Berlin: being the Berlin Antiseptic Method; by M. Flynn, F.R.C.S. (J. Richardson & Co., Leicester, 1894).—A Case of Ringworm of the Scalp simulating Alopecia Areata; by H. H. Whitehouse, M.D.; reprint from the New York Journal of Cutaneous and Genito-urinary Diseases for October, 1893.—Die Beri-beri Krankheit Eine geographisch-medicinische Studie; von Dr. B. Scheube (Gustav Fischer, Jena, 1894).—The Humanitarian, March, 1894 (Swan, Sonnenschein, & Co., Paternoster-square, London); price 6d.—Guide to Somerset House, the Law Courts, and Government Offices; by T. W. Hanrahan (J. H. Evans, St. Paul's-buildings, Paternoster-row, London, 1894); price 2s.—Indian Village Life, its present Urgent Want; by M. B. Colah, M.D.; reprint (printed at the Ripon Printing Press, Bombay, 1893).—Sanitary Regulation of Pilgrim Fairs; by M. B. Colah, M.D.; reprint from the Indian Medico Chirurgical Review, Bombay.—National Academy of Science, Vol. VI.; Seventh Memoir: Human Bones of the Hemenway Collection in the United States Army Medical Museum.—Die Behandlung der tuberculösen Lungenschwindsucht; von Dr. A. von Székely (A. Hirschwald, Berlin, 1894).—Grundriss der Sprachstörungen, deren Ursache, Verlauf, und Behandlung; von Dr. L. Treitel (A. Hirschwald, Berlin, 1894).—Sugar as a Food in the Production of Muscular Work; by V. Hadley, M.D. (Harrison & Sons, St. Martin's lane, London).—Cases to illustrate the Relationship which exists between Wryneck and Congenital Hæmatoma of the Sterno-Mastoid Muscle; by D'Arcy Power, M.B. Oxon., F.R.C.S. Eng. (Adlard & Son, Bartholomew-close, London, E.C., 1894).—A Handy Book on the Law of Bills, Cheques, Notes, and I O U's: entirely rewritten: by James W. Smith, Barrister-at-Law; 58th thousand (Effingham Wilson & Co., Royal Exchange, London, E.C., 1894); price 1s. 6d. net.—Dietary Tables, Menu, Cookery Receipts for Diabetics, and Price List of Diabetic Foods; by G. Van Abbott & Sons, 6, Duke-street-mansions, London, W. (Grosvenor Art Printing Company, Old Bailey, London, E.C.).—The Ophthalmic Review; February, 1894 (J. & A. Churchill, London); price 1s.—Archives de Neurologie; No. 84, 1894 (Bureau du Progrès Médical, Paris).—Magazines for March: Sunday at Home, Leisure Hour, Boy's Own Paper, Boy's Out-door Games and Recreations, Girl's Own Paper, Girl's Own Out-door Book (Religious Tract Society).

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week for publication in the next number.*

ADAM, WALTER, M.B. Edin., has been appointed Assistant Medical Officer to the Grahamstown Asylum, Cape Colony.

ADAMS, F. E., M.D., M.Ch. Irel., D.P.H. Camb., has been appointed District Agricultural Analyst for Bolton under the Fertilisers and Feeding Stuffs Act, 1893.

ARNOLD, G. J., L.R.C.P., M.R.C.S., has been re-appointed Clinical Assistant in the Special Department for Diseases of the Throat at St. Thomas's Hospital.

BABER, CRESSWELL, M.B. Lond., has been appointed Surgeon to the Royal Ear Hospital.

BAKER, JAMES P., L.R.C.P., L.R.C.S., F.R.C.S. Edin., has been appointed Public Vaccinator for the District of Eketahuna, New Zealand.

BARROW, W. D., M.B., C.M. Edin., M.R.C.S., L.R.C.P. Lond., has been appointed Junior House Surgeon to the Borough Hospital, Birkenhead.

BEAMAN, E. H., M.R.C.S., has been appointed Medical Officer for the Misterton Sanitary District.

BOOBBYER P., M.B., M.S. Durh., M.R.C.S., has been appointed Honorary Medical Officer of the Nottingham and Notts Convalescent Homes.

BOYD, R., M.B., C.M. Glasg., has been appointed Assistant House Surgeon to the Infirmary for Children, Liverpool.

BROWN, STANLEY M., M.B. Lond., M.R.C.S., L.R.C.P., has been appointed House Surgeon to the Salford Royal Hospital, vice G. E. Newby, resigned.

CALDWELL, J. C., M.B. Edin., has been appointed Resident Medical Officer to the Albany General Hospital, Grahamstown, South Africa.

CARVER, J. R., M.A., M.B., B.C. Cantab., has been appointed Clinical Assistant in the Special Department for Diseases of the Skin at St. Thomas's Hospital.

CHEATLE, ARTHUR H., F.R.C.S., has been appointed Assistant Surgeon to the Royal Ear Hospital and Aural Clinical Assistant to King's College Hospital.

COLLCUTT, A. M., M.A., M.B., B.C. Cantab., L.R.C.P., M.R.C.S., has been appointed Clinical Assistant in the Special Department for Diseases of the Ear at St. Thomas's Hospital.

COOKE, C. W., M.D. Lond., L.R.C.P., M.R.C.S., has been appointed Clinical Assistant in the Special Department for Diseases of the Ear at St. Thomas's Hospital.

CORBOULD, V. A. L. E., M.R.C.S., L.R.C.P., has been appointed Resident Obstetrical Officer at Charing-cross Hospital.

CRAGO, W. H., L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Medical Officer for the Sydney (New South Wales) Benevolent Asylum.

CUFF, A. W., B.A. Cantab., L.R.C.P., M.R.C.S., has been appointed Clinical Assistant in the Special Department for Diseases of the Throat at St. Thomas's Hospital.

DERAVIN, E. A., M.B., Ch.B. Melb., has been appointed Health Officer for the Shire of East Loddon, North and South Ridings, and the Borough of Inglewood, Victoria, Australia.

DEYNS, C. J., M.R.C.S., has been appointed Medical Officer for the fifth Sanitary District of the Newport Pagnell Union, vice Johnston, resigned.

DICKSON, H. A., L.R.C.P., M.R.C.S., has been appointed Assistant House Surgeon to St. Thomas's Hospital.

DOOLAN, D., L.R.C.P., L.M., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Resident Surgeon at the St. Vincent's Hospital, Sydney, New South Wales.

DUNN, D. S., M.D., M.Ch. Irel., has been reappointed Medical Officer for the Warboys Sanitary District of the St. Ives Union.

FORSMAN, JOS., L.R.C.P., L.M. Edin., M.R.C.S., has been appointed Honorary Medical Officer for the Sydney (New South Wales) Benevolent Asylum.

GRAHAM, JAS., M.D., Ch.M. Edin., has been appointed Honorary Medical Officer for the Sydney (New South Wales) Benevolent Asylum.

HAINWORTH, E. M., B.Sc. Lond., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

HALL, F. W., M.D. Lond., M.S., L.R.C.P., M.R.C.S., has been appointed Examiner in Pharmaceutical Chemistry and Dispensing to the Sydney (New South Wales) Technical College.

HAYDON, GERALD E. T., L.S.A. Eng., has been appointed Health Officer for the Shire of Minhamite, West Riding, Victoria, Australia, vice Adam, deceased.

HEWETT, J. W., L.R.C.P., M.R.C.S., has been appointed Assistant House Surgeon to St. Thomas's Hospital.

HICKS, T. W., L.R.C.P., M.R.C.S., has been appointed Senior Obstetric House Physician to St. Thomas's Hospital.

HOOPER, GEORGE H., M.R.C.S., L.R.C.P., has been appointed House Physician at Charing-cross Hospital.

HUGHES, W. KENT., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Tutor to Trinity College, Melbourne, Victoria, Australia.

HUXTABLE, L. R., M.S., Ch.M. Edin., has been appointed Acting Official Visitor to the Hospitals for the Insane at Gladesville and Callan Park, and the Licensed House for the Insane at Cook's River, New South Wales.

JAFFÉ, C. S., M.B., B.S. Lond., L.R.C.P., M.R.C.S., has been appointed Junior Obstetric House Physician to St. Thomas's Hospital.

KANE, F. W., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been reappointed Medical Officer of the Newcastle Friendly Societies' Dispensary, New South Wales.

KNIGHT, ERNEST, M.R.C.S., L.R.C.P., has been appointed Junior House Surgeon to the Salford Royal Hospital, vice S. M. Brown.

LANE, C. T., M.B., Ch.B. Melb., has been appointed a Medical Officer of the United Friendly Societies in Brisbane, Queensland.

LODGE, SAMUEL, Jun., M.D. Durh., has been appointed Special Assistant Surgeon to the Bradford Eye and Ear Hospital, vice Andrew Little, M.B., C.M. Aberd., resigned.

MACEVOY, H. J., M.D., B.Sc. Lond., L.R.C.P., M.R.C.S., has been appointed Honorary Medical Officer to the Kilburn, Maida Vale, and St. John's Wood General Dispensary.

MAHER, W. O., M.D., Ch.M. Irel., M.R.C.S. Eng., has been appointed Honorary Assistant Ophthalmic Surgeon at the Sydney Hospital, New South Wales.

MERRY, W. J. C., M.A., M.B., B.Ch. Oxon., has been appointed Resident House Physician to St. Thomas's Hospital.

MILTON, A. R. O., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

MUIR, ROBERT D., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Out-patient Department at the Miller Hospital, Greenwich, and Royal Kent Dispensary.

NEVINS, J. ERNEST, M.B. Lond., M.R.C.S., has been appointed Honorary District Medical Officer to the Ladies' Lying-in Charity of Liverpool, vice W. G. Moore, resigned.

NISBET, W. B., M.B., Ch.M. Edin., has been appointed Medical Officer of the Townsville Medical Union, Queensland.

OFFORD, J. A., has been appointed Government Medical Officer at Fiji.

PALMER, JOHN R., L.K.Q.C.P., L.M., L.R.C.S. Irel., has been appointed Health Officer for Mundoora, South Australia.

PATERSON, D. R., M.D., M.R.C.P. Lond., has been appointed Honorary Physician to the *Hamadryad* Seaman's Hospital, Cardiff.

PERSHOUSE, F., L.R.C.P., M.R.C.S., has been appointed Non-Resident House Physician to St. Thomas's Hospital.

RICHARDSON, S. W. F., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

RUSSELL, A. E., L.R.C.P., M.R.C.S., has been re-appointed Resident House Physician to St. Thomas's Hospital.

SANDALL, T. EDWARD, B.A. Cantab., M.R.C.S., L.R.C.P., has been appointed House Surgeon at Charing-cross Hospital.

SPROD, ALFRED E., M.B., Ch.B. Melb., has been appointed Health Officer for the Shire of Meredith, Victoria, Australia, vice Hardy, resigned.

TACKWELL, J. B., M.B., Ch.M. Edin., has been appointed Medical Officer of the Townsville Medical Union, Queensland.

TAYLOR, GERARD C., M.A., B.C. Camb., has been appointed Senior House Surgeon to the Infirmary for Children, Liverpool.

THOMPSON, G. W., B.A., M.B., B.C. Cantab., L.R.C.P., M.R.C.S., has been appointed House Surgeon to St. Thomas's Hospital.

THOMSON, A., M.B., C.M. Edin., D.P.H. Camb., has been reappointed Medical Officer of Health for Stratford-on-Avon Urban and Rural Sanitary Districts and Public Vaccinator for the Welford District.

TOMLINSON, W. R., L.R.C.S. Irel., has been appointed Medical Officer of the Townsville Medical Union, Queensland.

UNITT, JAMES A., L.R.C.P., L.M. Edin., M.R.C.S., has been appointed Medical Officer for the Quorndon Sanitary District of the Barrow-upon-Soar Union.

WHITFIELD, DAVID W., M.R.C.S., L.R.C.P. Irel., has been appointed Medical Officer and Public Vaccinator to the Ironbridge District of the Madeley Union, vice Jas. Procter, M.R.C.S., L.S.A., deceased.

WINDSOR, C. W., M.A., M.B., B.C. Cantab., has been appointed Non-Resident House Physician to St. Thomas's Hospital.

WINSTON, W. B., B.Sc. Lond., L.R.C.P., M.R.C.S., has been re-appointed Clinical Assistant in the Special Department for Diseases of the Skin at St. Thomas's Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £70, with board, residence, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician, for six months. Board and residence, and allowance for washing provided. Applications to the Secretary, at the office, 24, Finsbury-circus, E.C.

CLAYTON HOSPITAL AND WAKEFIELD DISPENSARY.—Junior House Surgeon, unmarried. Honorarium £40 per annum, with board, lodging and washing.

COUNTY ASYLUM, Prestwich, Manchester.—Assistant Medical Officer, unmarried. Salary commences at £100 a year, increasing to £200 by successive increments of £25, with apartments, board, attendance, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, Bloomsbury, W.C.—House Surgeon to Out-patients (Non-resident), for six months. Salary 25 guineas.

JOINT COUNTIES' LUNATIC ASYLUM, Carmarthen.—Medical Superintendent. Salary £500 per annum, with unfurnished house, garden produce, fire, lights, and washing. Applications to the Clerk to the Visitors, Carmarthen.

KINGSTON UNION.—Medical Officer and Public Vaccinator for the Parish of Teddington. Salary as Medical Officer £100 per annum, in addition to certain extra medical fees and fees as Public Vaccinator. Applications to the Clerk, Guardians' Office, Portsmouth-road, Kingston.

LONDON HOSPITAL, E.—Physician.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Residence in the hospital, board, and washing provided, and an honorarium of five guineas on satisfactory completion of term of appointment.

MILLER HOSPITAL AND ROYAL DISPENSARY, Greenwich-road, S.E.—Junior Resident Medical Officer, for six months. Salary at the rate of £30 per annum, with board, attendance, and washing.

NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Assistant Surgeon.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at the rate of £40 per annum, with board and lodging.

ROYAL SOUTH HANTS INFIRMARY, Southampton.—House Surgeon, for one year. Salary, £100 per annum, with board and lodging.

SHEFFIELD PUBLIC HOSPITAL AND DISPENSARY.—Assistant House Surgeon, and also Junior Assistant House Surgeon, unmarried. Salary £65 and £50 respectively, with board, lodging, and washing.

ST. THOMAS'S HOSPITAL, Westminster-bridge.—Resident Assistant Physician.

TORBAY HOSPITAL, Torquay.—Honorary Ophthalmic Surgeon.

TOWER HAMLETS DISPENSARY, White Horse-street, Stepney, E.—Resident Medical Officer. Salary £120 per annum, and furnished rooms, coals, gas, and attendance.

TUNBRIDGE WELLS GENERAL HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum, with board, furnished apartments in the hospital, gas, firing, and attendance.

Births, Marriages and Deaths.

BIRTHS.

BOULTER.—On Feb. 23rd, at Barnard-house, Richmond, Surrey, the wife of H. B. Boulter, F.R.C.S., of a daughter.

BURTON-FANNING.—On Feb. 25th, at Norwich, the wife of F. W. Burton-Fanning, M.B., M.R.C.P., of a daughter.

ELAM.—On Feb. 16th, at New Barnet, Herts, the wife of W. H. Elam, F.R.C.S. Eng., of a daughter.

MANSELL-MACCULLOCH.—On Feb. 23rd, at The Touillets, Guernsey, the wife of William Mansell-MacCulloch, M.D., of a daughter.

MARRIAGES.

CARRELL—HADDOW.—On Feb. 24th, at Barry-road Wesleyan Church, George N. P. Carrell, M.R.C.S., L.R.C.P., of Ilford, to Sage Ward, daughter of Nathaniel Haddow, of East Dulwich.

KENNEDY—COX.—On Feb. 28th, at Foggyley, Dundee, by the Rev. A. B. Connel, D.D., assisted by the Rev. Theodore Marshall, M.A., James Martin Kennedy, M.D., Aberford, Leeds, to Annie Elizabeth, second daughter of William Cox, of Snaigow, Dunkeld.

LIVINGSTON—WATSON.—At Renfield Free Church, Glasgow, on the 21st Feb., by the Rev. Wm. M. MacGregor, M.A., assisted by the Rev. J. Irving, M.A., Innellan, and Rev. T. Crerar, M.A., North Leith, Jno. Livingston, M.D., Barry, Glamorganshire, to May Evelyn Bissett, second daughter of J. Watson, Esq., Cluniter, Innellan, Argyllshire.

DEATHS.

HOLT.—On Feb. 27th, at Savile-row, Barnard Wight Holt, F.R.C.S., aged 77.

SAVILE.—On Feb. 23rd, at Nafferton, Hull, Robert Savile, M.D. Edin., M.R.C.S., aged 69.

VINEN.—On Feb. 23rd, at Gordon-road, Ealing, Edward Hurt Vinen, M.D., F.L.S., aged 79.

WHEELER.—On Feb. 26, at 11, Museum-terrace, Chelmsford, Daniel Wheeler, M.R.C.S. Eng., L.S.A., aged 75.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 1st, 1894.

	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Dry Bulb.	Wet Bulb.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp	Rainfall.	Remarks at 8.30 A.M.
Feb. 23	30·04	S.W.	32	F.	67	46	30	—	Hazy
,, 24	29·64	W.	42	41	86	51	32	0·20	Cloudy
,, 25	29·97	S.W.	44	43	54	52	36	..	Overcast
,, 26	29·75	S.W.	51	49	57	54	43	0·13	Overcast
,, 27	29·84	S.W.	51	50	75	56	50	0·03	Overcast
,, 28	29·90	S.	41	40	53	48	38	0·02	Raining
Mar. 1	29·96	S.W.	46	44	74	50	38	0·19	Cloudy

Medical Diary for the ensuing Week

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY.—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (1 P.M.), St. Mark's (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynecological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.).

TUESDAY.—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1.30 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.)

WEDNESDAY.—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), Great Northern Central (2.30 P.M.), King's College (1 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Great Ormond-street (9.30 A.M.).

THURSDAY.—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (2 P.M.), Chelsea (2 P.M.), Soho-sq. (2 P.M.), North West London (2 P.M.)

FRIDAY.—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.)

SATURDAY.—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (2.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), Cancer (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY.—MEDICAL SOCIETY OF LONDON.—8 P.M. Annual General Meeting for the election of Officers and Council. 8.30 P.M. Ordinary Meeting. *Dr.* Lewis Jones: On the Electrical Treatment of Infantile Paralysis.—Dr. Wallis Ord and Mr. Herbert F. Waterhouse: A case of Acute Meningitis diagnosed as Tubercular, treated by Trephining and Drainage of the Sub-arachnoid Space.

TUESDAY.—PATHOLOGICAL SOCIETY OF LONDON.—Adjourned Debate on Rodent Ulcer. Mr. J. Hutchinson, jun.: Deformity of Shoulder Girdle. Card Specimens:—Mr Cecil Beadles: (1) Cystic Kidneys; (2) Cholesterine Cyst of Kidney; (3) False Bursæ from Arm.

WEDNESDAY.—OBSTETRICAL SOCIETY OF LONDON.—8 P.M. Specimens will be shown by Dr. William Duncan, Dr. Keith Napier, and others. Dr. R. P. Harris: A Plea for the Practice of Symphyseotomy, based upon its Record for the past Eight Years (communicated by Dr. Lewers).—Dr. Gow: The Relation of Heart Disease to Menstruation.

THURSDAY.—OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM. 8.30 P.M. Living and Card Specimens at 8 P.M. Mr. Spencer Watson: A case of Interstitial Keratitis with intense Photophobia and Sneezing in a Man of Thirty-one Years.—Mr. J. B. Lawford: Peculiar Pigmentation of Iris and Conjunctiva.—Mr. H. Work Dodd: A case of Coloboma of Iris and Choroid, with Remains of the Hyaloid Artery.—Mr. Juler: A case of Unilocular Optic Neuritis.—Mr. Cowell and Mr. John Griffith: A case of Circumferential Folding of the Periphery of the Iris with detachment of the Retina.—Mr. Priestley Smith: Snellin's Shield for Protection of Eye after Operation. Continuation of the Discussion on Mr. Jonathan Hutchinson's paper on School Ophthalmia. Mr. Hill Griffith: Some cases of Orbital Tumours.—Mr. R. Williams: (1) A case of Rapidly Growing Tumour of the Orbit; (2) A case of Epicanthus (with photographs); (3) A case of Double Optic Neuritis.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY (Gt. Northern Central Hospital, Holloway-rd., N.).—9 P.M. Dr. Patrick Manson: The Diagnosis of Tropical Diseases seen in London (with lantern illustrations).—Mr. Evan Jones: Tubal Pregnancy; Rupture; Abdominal section; Recovery.

FRIDAY.—CLINICAL SOCIETY OF LONDON.—8.30 P.M. Mr. Mansell Moullin: A case of Cerebral Abscess.—Mr. Battle: Three cases of Extra-dural Hæmorrhage.—Mr. C. B. Lockwood: Excision of Part of a Dislocated Internal Semilunar Fibro-cartilage of the Knee; Account of Result Twenty-one Months afterwards.—Dr. W. Cayley and Mr. Bland Sutton: A case of Perforation of the Bowel in Typhoid Fever treated by Washing Out the Peritoneal Cavity and Excising the Perforation.—Mr. Christopher Heath: Two cases of Rectangular Ankylosis of the Hip-joint treated by Operation.

LECTURES AND ADDRESSES.

MONDAY.—LONDON POST-GRADUATE COURSE.—Royal London Ophthalmic Hospital, Moorfields, 1 P.M., Mr. W. Lang: Squint.—London Throat Hospital, Gt. Portland-st., W., 8 P.M., Mr. G. Stoker: Impaired Movements of the Vocal Cords.—Bacteriological Laboratory, King's College, 3 P.M., Prof. Crookshank and Dr. Hewlett: Tetanus, Rabies, and Cholera.

TUESDAY.—LONDON POST-GRADUATE COURSE.—Bethlem Hospital, 2 P.M., Dr. Corner: Impulsive Insanity, Homicidal Insanity, Moral Insanity.

ROYAL INSTITUTION.—3 P.M. Prof. Charles Stewart: Locomotion and Fixation in Plants and Animals.

LONDON SKIN HOSPITAL.—8 P.M. Mr. James Startin: Ringworm and Alopecia.

WEDNESDAY.—LONDON POST-GRADUATE COURSE.—Hospital for Consumption, Brompton, 4 P.M., Dr. C. Theodore Williams: Diagnosis of Pulmonary Tuberculosis.—Royal London Ophthalmic Hospital, Moorfields, 3 P.M., Mr. A. S. Morton: Ocular Paralyses.—Hospital for Skin Diseases, Blackfriars, 1 P.M., Dr. Payne: Ringworm and Vegetable Parasitic Diseases.

WEST LONDON HOSPITAL (Hammersmith, W.).—5 P.M. Dr. Aldren Turner: Some Syphilitic Spinal Lesions. (Post-graduate Course.)

THURSDAY.—LONDON POST-GRADUATE COURSE.—Hospital for Sick Children, Gt. Ormond-st., 3.30 P.M., Dr. Lubbock: Selected Medical Cases.—National Hospital for Paralysed, Bloomsbury, 2 P.M., Mr. Victor Horsley: Surgery of the Nervous System.—Central London Sick Asylum, Cleveland-st., W., 5.30 P.M., Mr. John Hopkins: Cases in the Wards.

FRIDAY.—LONDON POST-GRADUATE COURSE.—Hospital for Consumption, Brompton, 4 P.M., Dr. C. Theodore Williams: Varieties of Pulmonary Cavities.

SATURDAY.—LONDON POST-GRADUATE COURSE.—Bethlem Hospital, 11 A.M., Dr. Percy Smith: Lunacy Law.

ROYAL INSTITUTION.—3 P.M. Lord Rayleigh: Light, with special reference to the Optical Discoveries of Newton.

Notes, Short Comments & Answers to Correspondents.

EDITORIAL NOTICE.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to the Office.

Lectures, original articles, and reports should be written on one side only of the paper.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET should be addressed "To the Publisher."

We cannot undertake to return MSS. not used.

PUBLISHER'S NOTICE.

IN order to facilitate the work of reference to the volumes of THE LANCET, we have arranged to publish duplicate copies of the Index to each half-yearly volume in a form in which they may be subsequently filed or bound together. Those of our subscribers who may wish to be supplied with loose copies can obtain the same (without extra charge) on making application to the Publisher of THE LANCET.

MEDICAL INCOMES.

THE *New York Medical Record* quotes a writer in the *Forum* on the question of incomes in the professional classes in England, who comes to the conclusion that the very successful are overpaid and the average man is meagrely paid. He gives the average income of the clergy as $600, that of a barrister $1200, and that of a medical man $1200. A successful lawyer gets $65,000. He estimates that Sir Andrew Clark got from $75,000 to $100,000. If by the latter it is meant that Sir Andrew Clark received in one year from fees actually taken in that year the statement is very doubtful. All these estimates must be taken with much hesitation; for there are no public, or rather published, data on which they can be founded. It is to be regretted that there are such diversities in medical income, as in others; and we should be glad to think that the average actual income—as distinguished from book-debts—was not less than £240 or more. Our American contemporary ends up by saying that the "industrious and God fearing" physician is seldom in want and never in affluence. This is rather hard on the "industrious and God-fearing" members of the profession, of whom Sir Andrew Clark was a most typical example.

PROFESSIONAL SECRECY IN BELGIUM.

AN Antwerp practitioner has recently been fined for taking too stringent a view of his obligation to preserve intact the confidence reposed in him by patients. Some sixteen years ago, it is alleged, he attended a gentleman and his wife for syphilis, each blaming the other as the source of the infection. The disease was cured and a healthy family was reared. Recently, in consequence of an action for divorce, the practitioner was called as a witness and interrogated as to the disease of sixteen years ago. He claimed the privilege of professional secrecy; but after a long legal argument this was decided by the court to be a case where the medical man is absolved from the obligation of secrecy. This not according with his own view of jurisprudence, he still declined to give the evidence sought, with the result that he was fined.

Mr. T. D. Hampson.—The recent registration of dentists has scarcely given time for the establishment of a custom or rule between them and registered medical men touching the etiquette of mutual professional services. Doubtless the tendency will be for medical men to treat registered dentists with the same consideration as registered medical practitioners, and *vice versâ*. But much will depend on circumstances and the particulars of individual cases. There are many dentists who by their modes of practice place themselves out of the pale of professional consideration.

Mr. Gledhill Hallas goes into other questions which are not pertinent. A medical man should be paid for certificates, and as the favourite principle just now is for the ratepayers to pay everything it is reasonable that they should pay for certificates, so vital for the protection of the schools.

THE SODEN FUND.

To the Editors of THE LANCET.

SIRS,—Since the last date on which you kindly acknowledged subscriptions to the above fund I have received the following:—

John Williams	..	..	£1 1 0	G. Whittaker	..	..	£0 10 6
George Padley	..	..	1 1 0	A. E. Lyster	..	..	0 10 0
B. B. Holland	..	..	1 1 0	D. Thomas	..	..	0 10 0
"M D, Derby"	..	..	0 10 6	Thos. Judson	..	..	0 7 6
C. Pinkerton	..	..	0 10 6	J. Buxton	..	..	0 6 0
H. H. Preston	..	..	0 10 6	W. Glenkarne	..	..	0 5 0
A. P. Fiddian	..	..	0 10 6	J. Hall	..	..	0 5 0
H. F. Davis	..	..	0 10 6	W. H. Brazil	..	..	0 5 0
E. P King	..	..	0 10 6	J. E. Garner	..	..	0 5 0
C. Biddle	..	..	0 10 6				

I am, Sirs, yours faithfully,

3, Northampton-terrace, Swansea, Feb. 26th, 1894. W. F. BROOK.

A NEW HEALTH RESORT.

OUR attention has been called by a correspondent to the merits as a health resort of Besançon, the chief town of the Département du Doubs, situated at a distance of a few hours' railway ride from Paris, and standing at an elevation of 800 feet above the level of the sea. The spot is described as being singularly picturesque, overlooking as it does the beautiful valley through which runs the river Doubs. Just beyond the gates of the town an establishment of saline baths has been founded which, we are informed, has been equipped with all the conveniences and appurtenances required to constitute it a desirable temporary resort for invalids suffering especially from lymphatic or articular disorders. The waters are stated to be especially rich in chlorides and bromides. The establishment remains open all the year round, and is in direct communication with Neuchatel.

Dr. H. Harley.—"Vaccination Vindicated," by Dr. McVail; an article by the same writer in Stevenson and Murphy's "Treatise of Hygiene," vol. ii.; also a small and useful monograph on "Vaccination and Small-pox," by Dr. E. J. Edwardes, 1892.

Dr. W. D. Haslam asks whether any of our readers can inform him if there is an asylum (private or otherwise) near Bournemouth—say, within a radius of twenty miles or less.

Nemo.—Dr. Auzoux, 56, Rue de Vaugirard, Paris.

"MATTHEW BAILLIE'S PILL."

To the Editors of THE LANCET.

SIRS,—Your recent reference to the pill which is connected with the eminent name of Matthew Baillie induces me to ask its composition, and whether it is similar to what is known at Guy's as the "infallible pill" for cardiac dropsy, consisting, if I am not mistaken, of digitalis, squill and black oxide of mercury?—I am, Sirs, yours truly,

Finsbury-square, Feb. 27th, 1894. R. HINGSTON FOX.

VACCINATION APPOINTMENTS.

A.—Our correspondent was quite right in resigning a vaccination appointment which involved travelling a distance of about sixty miles, visiting three stations three times, and vaccinating eight cases, all for the sum of 24*s.*, or 3*s.* a case. His request for 5*s.* per case was most reasonable. It is to be deeply regretted that any other practitioner should have offered to take the work for less.

LONGEVITY IN THE ISLES OF SCILLY.

DR. T. THORNTON MACKLIN, the writer of an interesting article which appeared in THE LANCET, April 1st, 1893, on "The Isles of Scilly as a Health Resort," has just prepared his report as medical officer of health for the Scilly Isles. The birth-rate for the past year is rather low, and a curious anomaly occurs in the death rate, which is lowest in the March and December quarters, whereas taking England as a whole the death-rate is highest during these quarters. Twenty-five per cent. of the deaths recorded are certified to be from old age, and the mean age of these deaths 83·6; 44 per cent. was of persons over sixty years of age, showing a mean age of seventy-eight years; and 78 per cent. of the deaths was of children under five years. The large preponderance of deaths of aged persons is accounted for by the fact that a large proportion of the youths of Scilly leave the islands for the mainland to earn their livelihood, while it is a well-known fact that very many of the islanders return to their native place to spend their declining years. The rate of infant mortality for the year was unusually high, being 170·25 per 1000 births, against an average of 142 per 1000 for England and Wales. Investigation proves that this is accounted for by a large proportion of premature births and improper feeding. No case of illegitimacy occurred in the islands during the year.

Ered.—We are sorry that it is impossible to afford our correspondent the information for which she asks. Application might be made to the Secretary of the London School of Medicine for Women.

Mr. A. E. Cox, M.B.—It seems reasonable in such a case to send a letter, in the sense of the one sent to us, to the actual patients of the retiring practitioner.

Mr. E H. Lee.—Colman: "Section Cutting and Staining." (H. K. Lewis.)

"MATERNAL IMPRESSIONS."

To the Editors of THE LANCET.

SIRS,—If, as Dr. Haycraft suggests in his deeply interesting lectures, the somatic cells exert no influence over the germ cells, how shall we explain the cases in which defects and changes are produced in the early fœtus by the agency of maternal impressions? Such cases are reported from time to time in the columns of THE LANCET and elsewhere, and are occasionally so remarkable as to be hardly explicable as mere coincidences. I am, Sirs, yours faithfully,

Feb. 26th, 1894. CHIRURGUS.

THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

THIS Congress is to meet in Washington on May 29th, 30th, and 31st, and on June 1st next, under the presidency of Dr. Alfred L. Loomis, of New York. The Congress is a conjoint triennial meeting at Washington, of certain national medical societies, so arranged that, while each society preserves its autonomy and has its own meetings, papers, and discussions, the members of all the societies meet together at stated hours to carry out the objects of the Congress. The executive committee, whose chairman is Dr. Landon Carter Gray of New York, announces that the International Navigation Company, representing the Red Star and the American lines of steamers, will extend the courtesy of half-rate outward bound tickets to delegates to the Congress who leave Europe before June 1st.

THE WIDOWS OF MEDICAL MEN AND GRATUITOUS ATTENDANCE.

B. P.—The widow of a medical man is entitled to the privileges of the profession, including gratuitous or considerate treatment if need be. It is, of course, possible that she may be much more able to pay fees than her medical adviser is to go without them. In that case the duty of consideration is on her side rather than on that of the attendant medical man.

M.D.—Such a family should have been in a club or provident dispensary. It is hard on the medical officer of the union to hand over such cases as this to him, and it is not good for people with such wages to become paupers as respects medical relief.

During the week marked copies of the following newspapers have been received:—*Thames Valley Times, Sandbach Guardian, Peterborough Advertiser, Local Government Chronicle, City Press, West Middlesex Standard, Australasian Medical Gazette, Sanitary Record, Liverpool Courier, Weekly Free Press and Aberdeen Herald, Reading Mercury, Batley Reporter, Australian Medical Journal, Hertfordshire Mercury, Leeds Mercury, Yorkshire Post, Liverpool Daily Post, Bristol Mercury, Citizen, Times of India, Sunday Times, Architect, Pioneer Mail, Builder, Morning, Surrey Advertiser, Glasgow Weekly Herald, Local Government Journal, Guy's Hospital Gazette, West Middlesex Advertiser, Burton Chronicle, Brighton Times, Whitby Gazette, Widnes Weekly News, Essex County Chronicle, Caithness Courier, Crieff Journal, Somerset Express, South Durham Mercury, Wrexham Advertiser, Stratford upon-Avon Herald, Craven Herald, Arbroath Herald, Fife Herald, Utica Daily Press, Scotsman, Fraternity, Dover Chronicle, Manchester Guardian, Belfast Evening Telegraph, Evesham Journal, Bridlington Gazette, The Referee, The News and Herald (Cleveland), Scottish Leader, Worcestershire Echo, &c., &c.*

Communications, Letters &c. have been received from—

A.—Dr. J. Armstrong, Liverpool; Dr. C. Aberdein-Jones, Brecon; Mr. W. C. Alexander, Wellington: Archives Clinique de Bordeaux, Editor of; Amalgamation, London.

B.—Dr. G. F. Blandford, London; Mr. J. E. Barrett, London; Mr. G. G. Barrett, H.M.S. *Garnet*, Esquimalt; Mr. T. B. Browne, London: Mons. Barrière-Bérard Paris; Mr. C. Birchall, Liverpool; Mr. A. E. Broster, Wirksworth; Mr. A. Butler-Smythe, London; Mr. L. A. Bidwell, London; Mr. W. F. Brook, London; Mrs. Dickenson Berry, London; Messrs. Blondeau et Cie., London; Bradford Children's Hospital, Secretary of; Bury Dispensary Hospital, Hon. Secretary of; B., London.

C.—Dr. A. Cordes, Geneva; Dr. Harry Campbell, London; Mr. A. Carney, Botwoodville, N.F.; Mr. C Clark, Wolverhampton Messrs. A. H. Cox and Co., Brighton, Messrs. Cooper & Holt, London; Cardiff Infirmary, Lady Superintendent of; Clapham Nursing Association, Lady superintendent of; C. B., Dublin; Chirurgus.

D.—Dr. Clement Dukes, Rugby; Mr. T. J. Dewar, Chelsea; Mr. H. G. Dain, Birmingham: Mr. F. C. Davies, Old Trafford; Dexter, London.

E.—Edinburgh School of Medicine, Secretary of; Exeter City Asylum, Medical Superintendent of; E. D.; Ered.

F.—Dr. R. Hingston Fox, London; Dr. E. L. Fenn, Colchester; Herr Gustav Fischer, Jena; Mr. G. H. Farrant, Salisbury; Mr. Alex. G. R. Foulerton, London; Mr W. Fairbank, Windsor; Felix, London.

G.—Dr. B. F. Gill, London; Dr J. Mortimer Granville, London; Mr Hastings Gilford, Reading; Mr. H. W. G. Green, Gibraltar; M. E. Grampietro, Berlin.

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M.—Dr. Madden, London; Dr. I. G. Modlin, Sunderland; Dr. G. A. Mundy, Bath; Mr. D. F. Matheson, London; Mr. G. H. Makins, London; Mr. J. Macready, London. Messrs. Maythorn and Son, Biggleswade; Mason College, Birmingham, Secretary of; Medico-Psychological Association, Sidcup, Hon. Gen. Sec. of; Manchester General Hospital, Secretary of; Maltine Manufacturing Co., London, Manager of; Medical Society of London, Secretary of; M.R.C.S., Weymouth; Mico, Bournemouth; Mutual, London; Myope; Mayfair, London.

N.—Nemo.

O.—Dr. C. E. Oldman, Blechingley; Messrs. Oliver and Boyd, Edinburgh; Obstetrical Society of London, Secretary of; *Oldham Standard*, Editor of.

P.—Dr. Pye-Smith, London; Mr. Stephen Paget, London; Mr. Percy Pope, London; Mr. D. Paulin, Edinburgh; Mr. W. W. Peat, Constantinople; Mrs. Beatrice Packman, Brighton; Prestwich County Asylum, Superintendent of; P. H., London; Philanthropic.

Q.—Mr. J. Quick, Torquay.

R.—Sir B. W. Richardson, London; Dr. E. Robinson, Farnham; Dr. T. C. Rail on, Manchester; Mr. L. Rawsthorn, Preston; Mr. A. Robinson London; Mr. J. Roberts, Pontypridd; Herr C. Reichert, Wien. Mr. F. Rogerson, Manchester; Messrs. Rigollot and Co., London, Messrs. J. Richardson and Co., Limited, Leicester; Royal Institute of Painters in Water Colours, Secretary of; Rome, Our Correspondent at; R., London.

S.—Dr. G. F. Still, London; Dr. A. T. Schofield, London; Mr. R. Moates Souther, London; Mr. W. S. Symes, Kiltegan; Mr. H. Sell, London; Messrs. G. Street and Co., London; Messrs. Street Bros., London; Mr. R. Simpson, London: Smithsonian Institute, Washington, U.S.A.; Sheffield Public Hospital, Secretary of; Sheffield Medico-Chirurgical Society, Secretary of; Swansea Borough Hospital, Treasurer of; Semex.

T.—Dr. E. B. Truman, Nottingham; Mr. Frederick Treves, London; Mr. H. Thompson, Hull, Herr B. G. Teubner, Leipzig; Mr. J. H. Thackrah, Halifax; Torbay Hospital, Secretary of; Tunbridge Wells General Hospital, Assistant Secretary of; Torquay Medical Society, Secretary of; T. H. B.

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W.—Dr. David Wallace, Edinburgh; Dr. Lennox Wainwright, Folkestone; Dr. F. R. Walters, London; Dr. J. J. Welply, Bandon; Mr. W. Roger Williams, Preston; Herr G. Weigand Hornburg; W. E. R.; W. F., Birmingham; W. H. H., London.

Letters, each with enclosure, are also acknowledged from—

A.—Dr. W. Anderson, Ruthwell; Mr W. Anderson, Carmarthen; A. P., Gainsborough; A. B., Birmingham.

B.—Dr. W. W. Baldwin, Florence; Dr J. W. Black, Greenock; Dr. Buttars, Lavenham; Mr. F. H. Blacke, Lutterworth; Mr. B. S. Browne, Warwick; Mr. W. Bottwood, Ipswich; Mr. B. Boake, Hirwain; Ben Rhydding Hydro. Establishment. Manager of; B., London; Basil, London; B. C., London; Bilney, Cardiff; Beta, Sheffield; Bunting, Southsea; Balance, London; B. A. M., London; Branch, London.

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D.—Dr. P. J. Daly, Cork; Mr. W. Drewitt, Kingston-on-Thames; Mr. C. Dolman, Warsop; Mr. O. J. Davies, Llansanan.

E.—Epsilon, London; Esse quam videri, London.

F.—Mr. J. Fitzgerald, Queenstown; Forceps, London.

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X.—X., London.

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